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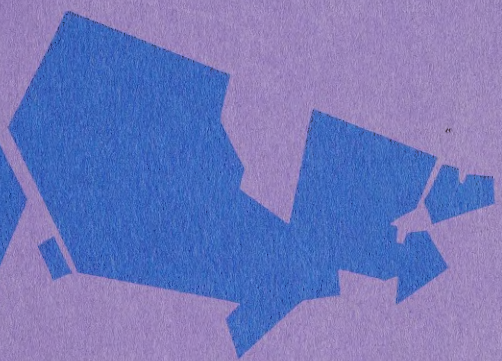
THE CANADA LAND INVENTORY



SOIL CAPABILITY ANALYSIS FOR AGRICULTURE IN NOVA SCOTIA

Report No. 8
1970

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SOIL CAPABILITY ANALYSIS FOR AGRICULTURE IN NOVA SCOTIA

by
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Agriculture and Marketing

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Although the author is a member of the Nova Scotia Department of Agriculture and Marketing, the views expressed are his own and do not necessarily reflect the views or policies of the federal or provincial governments.

SUMMARY

Nova Scotia has a land area of 13,057,000 acres. The climate is humid temperate. Annual precipitation ranges from 60 inches in coastal areas to about 40 inches inland; the frost free period ranges from 160 days on the south coast to less than 60 days in a few inland valleys.

The uplands and highlands usually have shallow, stony soils and rock outcrops are common. Most areas with significant agricultural potential are found in the lowlands, where the soils have developed on deep tills, alluvial floodplains and fluvio-marine sediments of tidal estuaries. Less than 25 per cent of the Province has agricultural potential under present economic conditions.

The soils have developed under conditions of high rainfall, a cool temperate climate, and forest vegetation. This combination of factors has favoured the process of leaching and, as a result, most of the soils are naturally acid and have low fertility. These conditions must be corrected before satisfactory yields of most crops can be attained. The most widely used soils are relatively stone free, moderately coarse textured and freely drained. These are preferred because they can be adapted to growing a wide range of crops. Finer textured soils have a restricted range of use because of inadequate drainage, low permeability or other factors. The major soils found in the Provinces are Podzols and Luvisols, with smaller areas of Regosols and Gleysols.

Areas of the Province having significant acreages of cleared farmlands with soils suitable for a wide range of crops have been designated as *multi-crop blocks*. These areas total 930,000 acres, of which about 30 per cent is now cleared arable land.

Other areas having actual and potential use, primarily for forage oriented agriculture, are designated as *limited-use blocks*. These areas total 1,911,000 acres, of which about 12 per cent is now cleared arable land.

The remainder of the Province, about 10,216,000 acres, is classed as *non-agricultural land*. This area has some potential for those types of agriculture not dependent on an arable land base or which require only a small acreage of good land for a viable operation.

Three major areas, Northumberland Shore, Annapolis Valley Region, and the Cobequid Shore are deemed to have adequate acreages of suitable soils to support grain farming as a major enterprise. In addition, these areas are suited to the production of small fruits, vegetables, potatoes and forage crops, including corn for silage. Of these three regions, only the Annapolis Valley is considered suitable for commercial production of tree fruits.

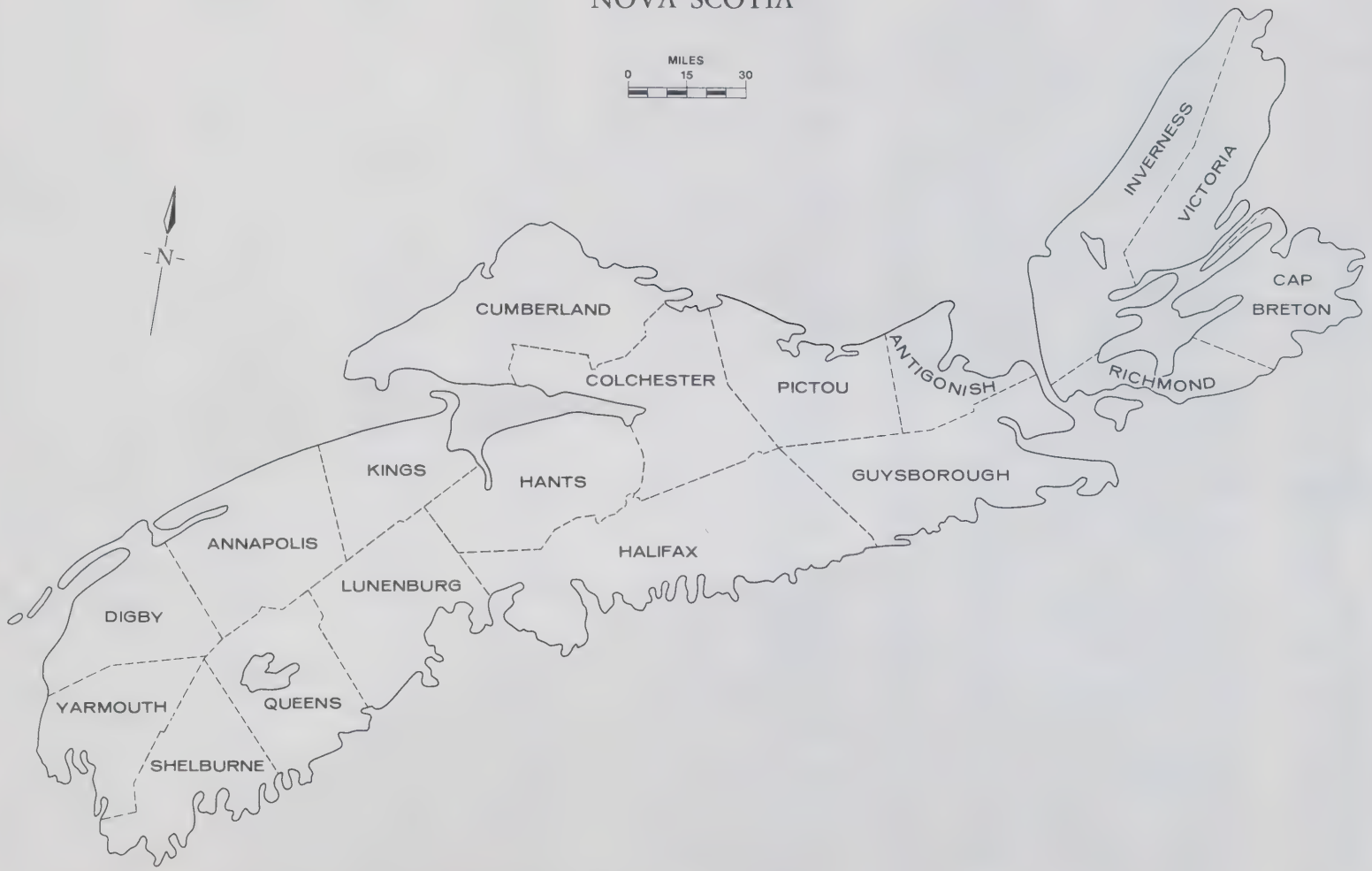
Antigonish Shore has a largely undeveloped potential for small fruit and vegetable production. A ready and growing market exists for these products and for fluid milk in the Strait of Canso and Sydney industrial areas. The potential of this shore for tobacco production is under investigation.

Sydney and Yarmouth have locational advantages which partly offset the disadvantages of poorer soils. A ready market exists in each area for fluid milk, small fruit, and fresh vegetables, all of which can be produced on a commercial scale. Farmers in these areas are next door to the potential markets of Newfoundland and Northeastern U.S.A. and would be in a position to benefit should these markets be developed on a large scale.

Lunenburg County is situated reasonably close to Metropolitan Halifax-Dartmouth. Moreover, a significant acreage of this area is suitable for commercial production of small fruits, vegetables and tree fruits. Development of local markets, together with expanded production of these products, would seem to offer the best chance for a viable agricultural industry in this area.

Lowbush blueberries, cranberries, christmas trees and tobacco show promise in specific areas of the Province; the potential for expansion in these crops should be further investigated.

NOVA SCOTIA



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INTRODUCTION

This report deals with the location, extent, and projected use of the soils of Nova Scotia suitable for agriculture. An attempt has been made to develop meaningful guidelines for the allocation of the Province's soil resources for agricultural uses. This was done through a careful analysis of the information contained in reports and maps of present land use and land capability, soil survey reports and socio-economic reports on agriculture in the Maritime Provinces. A technique of land blocking was used to delineate specific areas of soils for agricultural use. Further subdivision of agricultural lands into multi-crop and limited-use categories permitted the designation of areas where specific types of farming or cropping have a reasonable prospect for success.

In addition to tables and figures showing the location and acreages of cleared lands suitable for specific groups of crops, the report contains a discussion of the physical constraints affecting the agricultural use of the Province's soils. Basic information is supplied on climate, geology, physiography and soils, together with a discussion on the interlocking relationships of such characteristics as soil texture, drainage and climate.

This information should prove useful to governments, corporations and individuals in making decisions relating to the location of those industries engaged in the production, storage, processing and distribution of agricultural crops.

LOCATION

Nova Scotia comprises a peninsular land area of approximately 13,057,000 acres and lies between 43° and 47° north Latitude and 59°30' and 66°30' west Longitude.

CLIMATE

The climate is humid temperate. Annual precipitation ranges from 60 inches in south coastal areas to about 40 inches inland. One third of this (15-20 inches) falls during the growing season, which ranges up to 200 days. The mean annual temperature is 43°F. The average frost free period ranges from 160 days on the south coast to less than 60 days in a few inland valleys. However, the mean frost free period of most inland areas exceeds 100 days (Figure 1).

> Most of the migrant low-pressure areas moving across eastern North America pass over the Atlantic Provinces; consequently this part of Canada has storms more frequently throughout the year than any other section of the country.

Despite the maritime location of this region, the climate is a modified continental type. It is affected by the general easterly movement of air masses from the interior, and because of this the mean annual range of temperature on the Nova Scotia coast is almost double that on the Pacific coast. At Halifax, January averages 24°, and July 65°F. However, near the coast there are frequent influxes of moist Atlantic air which produce mild spells in winter and cool, foggy periods in the summer. In the spring frequent northeast winds, cooled by the waters of the Labrador current, delay the season.

Precipitation is usually ample during the growing season in all parts of the Atlantic Provinces. Most of it is produced by cyclonic storms; thunderstorms in summer are not frequent, occurring on the average 10 or 12 times a year. Usually, precipitation is heaviest in late fall and early winter. Generally Nova Scotia is rather cloudy with sunshine hours highest in August and lowest in December.

Mention must also be made of the fogs along the coasts where up to ninety days a year are foggy. The Northumberland Strait area is exceptional in being fairly free of fogs with only ten foggy days a year. Usually, fogs occur in the morning, clearing up before noon. Along the south coast fogs are most frequent in summer whereas farther north the maximum occurs in late spring and early summer. The Annapolis Valley has only about ten foggy days a year, much less than the Bay of Fundy shore. The North Mountain, which lies between the two, quite effectively serves as a barrier, although often the fog may be seen piled along its crest, wisps of it occasionally spilling over and dissipating on the south slope.

In summary, this region has a modified continental type climate despite its maritime location. It has changeable weather due to the passage of numerous storms as they leave the continent. Winters are cold, raw and quite snowy. Springs are late and short, summers cool and rather cloudy, especially along the coast.[1]

Corn Heat Units (C.H.U.)

The measurement of Corn Heat Units is based on a rather complex formula utilizing averages of monthly maximum and minimum temperatures during the corn growing season. In Ontario, corn is matured for grain in areas having 2,500 or more accumulated C.H.U. and for silage with as few as 2,100 C.H.U.

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[1] The climates of Canada for Agriculture - Canada Land Inventory, Report No. 3, 1966, p. 4.

NOVA SCOTIA

FIGURE 1 — Mean frost free period (days)

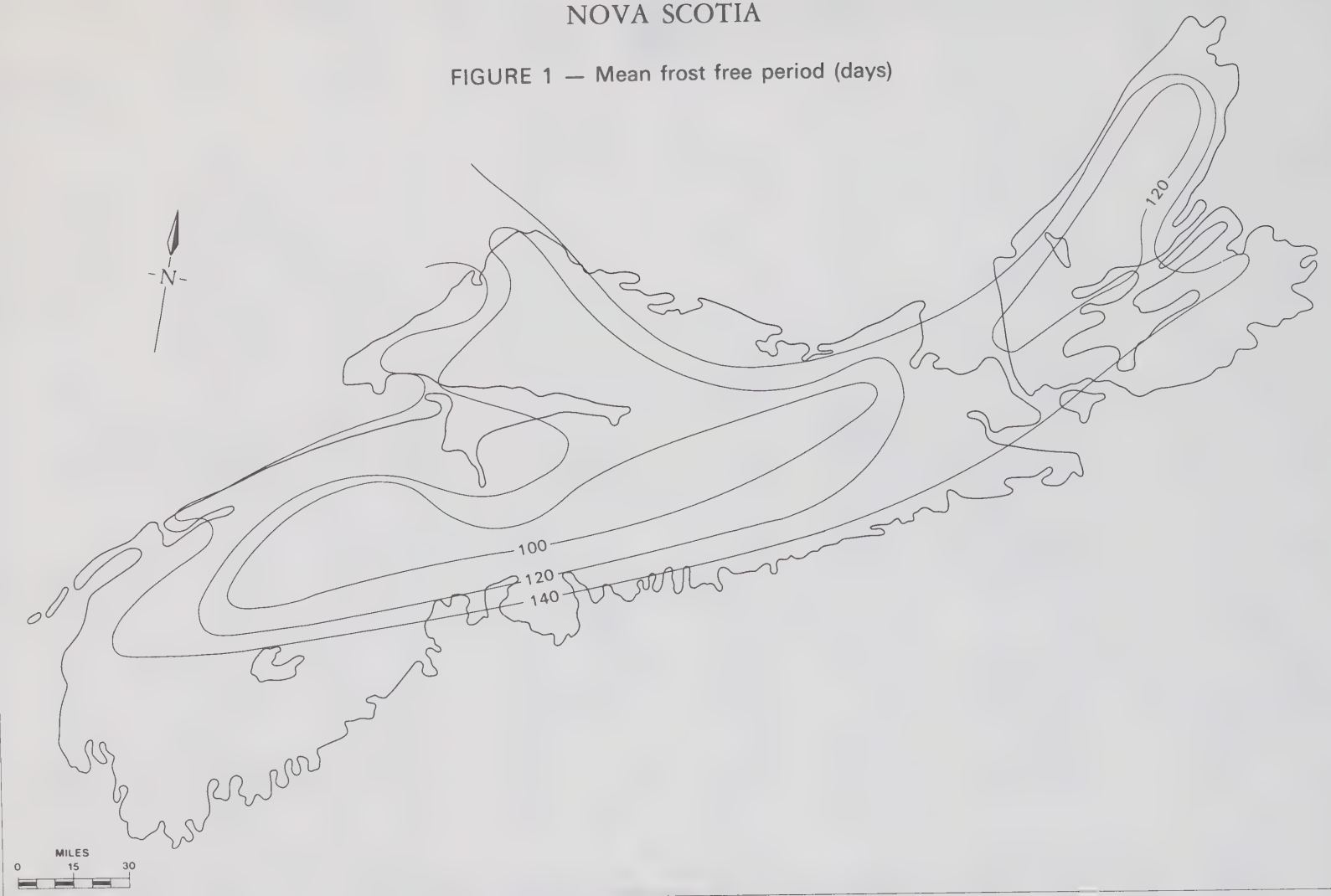

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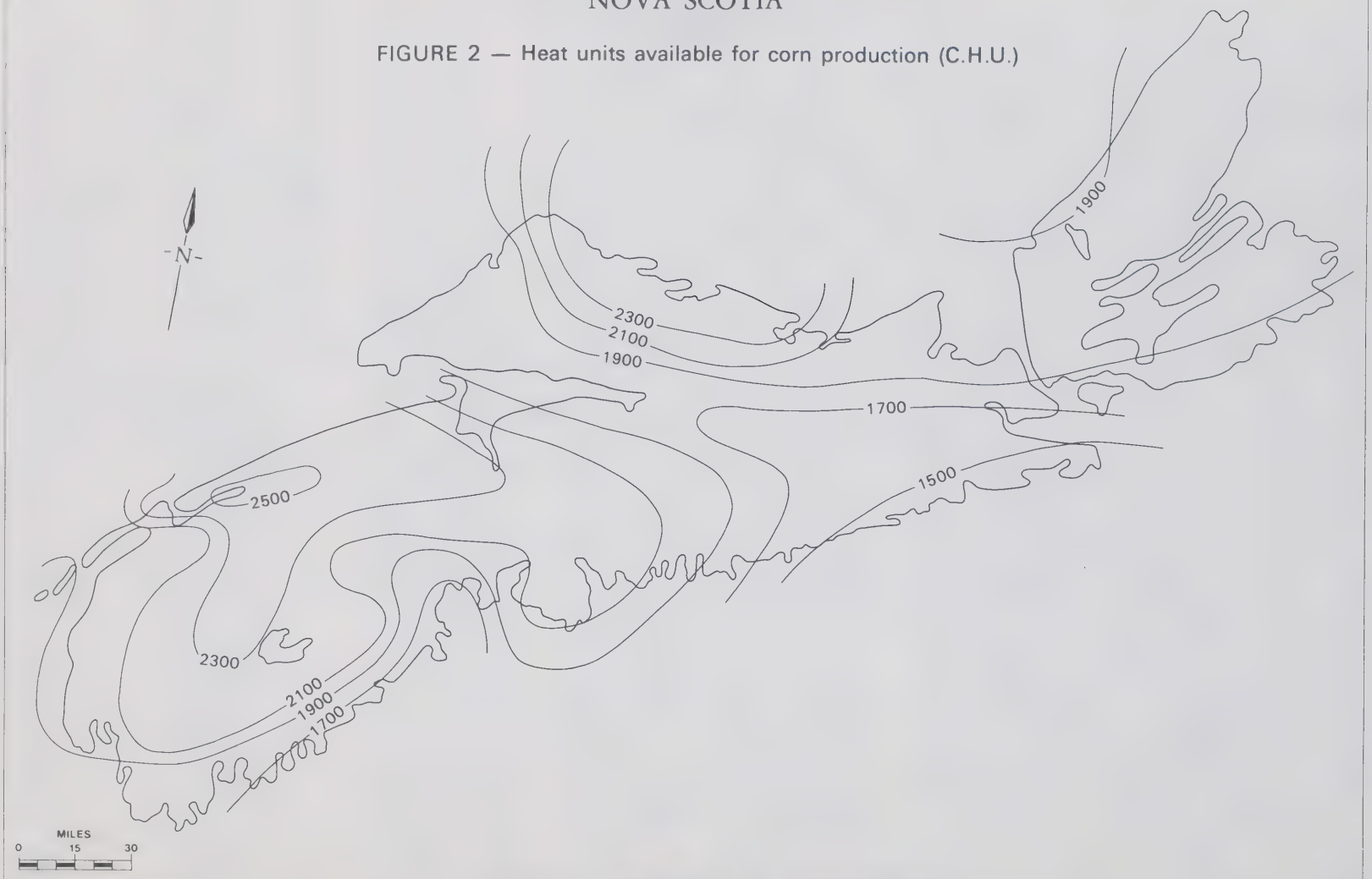
FIGURE 2 — Heat units available for corn production (C.H.U.)



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In Nova Scotia most of the agricultural areas lie in the 1,900-2,300 C.H.U. zone (Figure 2). However, there is growing evidence to indicate that corn will consistently mature with fewer heat units than are required in Ontario. In some experiments corn has matured to the grain stage with only 2,100 C.H.U. and to good quality silage in areas with only 1,900 C.H.U. as measured by the standard formula.

GEOLOGY

Rocks of nearly every age, from Precambrian to Triassic, are exposed on the surface of the Province. In general, the older rocks are more resistant to weathering and these, ranging in age from Precambrian to Lower Mississippian, underlie the highlands and uplands. Triassic basalt forms the protective barrier referred to as the North Mountain between the Annapolis Valley and the Bay of Fundy.

The highland areas are composed of metamorphosed sedimentary rocks such as slate, argillite, quartzite, schist and gneiss, intruded by granite, diorite, felsite and some ultra-basic rocks. Similar rocks, including shale and limestone, occupy the uplands.

Softer rocks underlie the lowlands. These rocks are mainly sandstone, limestone, shale and conglomerate of Carboniferous and Triassic age. They are mainly reddish in color, but include some grayish and yellowish beds.

> The upland areas show evidence of being the remnants of old erosion surfaces preserved on the harder rocks. Later, in the Ice Age of the Pleistocene Period, great ice sheets spread over the land and, when melted, left a mixture of unconsolidated material unevenly spread over the bed rock.[1,2]

PHYSIOGRAPHY

The detached upland surfaces of the Atlantic Provinces are remnants of a broad peneplain that had its highest elevation in Newfoundland and sloped south and southwestward toward the Atlantic Coast. Parts of this upland surface are roughly undulating or hilly terrain. Other parts form level crestlines of mountains and high tablelands or plateaux (Figure 3).

In Nova Scotia the highland surface has an elevation of about 700 feet in the western part of the Province and rises gradually toward the northeast to the tableland of Cape Breton, about 1,200 feet above sea level.

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[1] A.D.B. Study - Maritime Agriculture - A Comparative Regional Analysis

[2] Glacial features include moraines, drumlins, kames and eskers

The upland surface of the Province rises gently from the Atlantic coast northward to an elevation of 600 to 800 feet in 40 miles, then drops abruptly to the lowlands on the north. The surface is undulating to strongly rolling, broken in some areas by numerous drumlins.

The lowlands, formed by weathering of less resistant rocks, are gently undulating to rolling plains, ranging in elevation from sea level to about 400 feet, but occasionally rising to 600 feet where they merge with the uplands.

> In Nova Scotia, with an area of 21,068 square miles, the land is mostly of low relief. Yet ridges of up to 1,000 feet in altitude run lengthwise through the centre of the Province, and the Cobequid mountains run east and west along the northern part of the mainland. Cape Breton Island is almost bisected southwesterly by the Bras d'Or Lakes and consists mainly of wooded upland rising in the north to a height of 1,747 feet, the highest point in the Province. The Atlantic side of the Province is generally rocky and deeply indented with bays and inlets.[1]

SOILS

The soils of Nova Scotia have developed under conditions of high rainfall, forest vegetation and a cool temperate climate. The result has been a process of leaching, which has removed a large proportion of the basic elements such as calcium, magnesium, potassium and sodium from the surface soils. In this process iron and aluminum have also been removed from the surface layer (A horizon) and moved downward to a zone of accumulation (B horizon). This process is called podzolization and soils thus formed are called podzols. Such soils are naturally of low fertility and require liming and fertilization for good crop production.

In the generalized soil map, Figure 4, the soils of the Province are grouped into six mapping units or areas. The taxonomic classification, composition and agricultural use of these areas is described as follows:

Area #1 Shallow, very stony, loamy Humic Podzols; Podzols; plus Gleysols, loamy Regosols, Rockland and Peat.[2]

This area comprises the North Mountain and the Highlands of the northern mainland and Cape Breton Island.

The soils have developed from sandy loam glacial till derived from igneous and metamorphic rocks. Soil textures are similar to those

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[1] A.D.B. study - Maritime Agriculture - A Comparative Regional Analysis

[2] Terms used in Taxonomic classification defined in most recent soil survey reports

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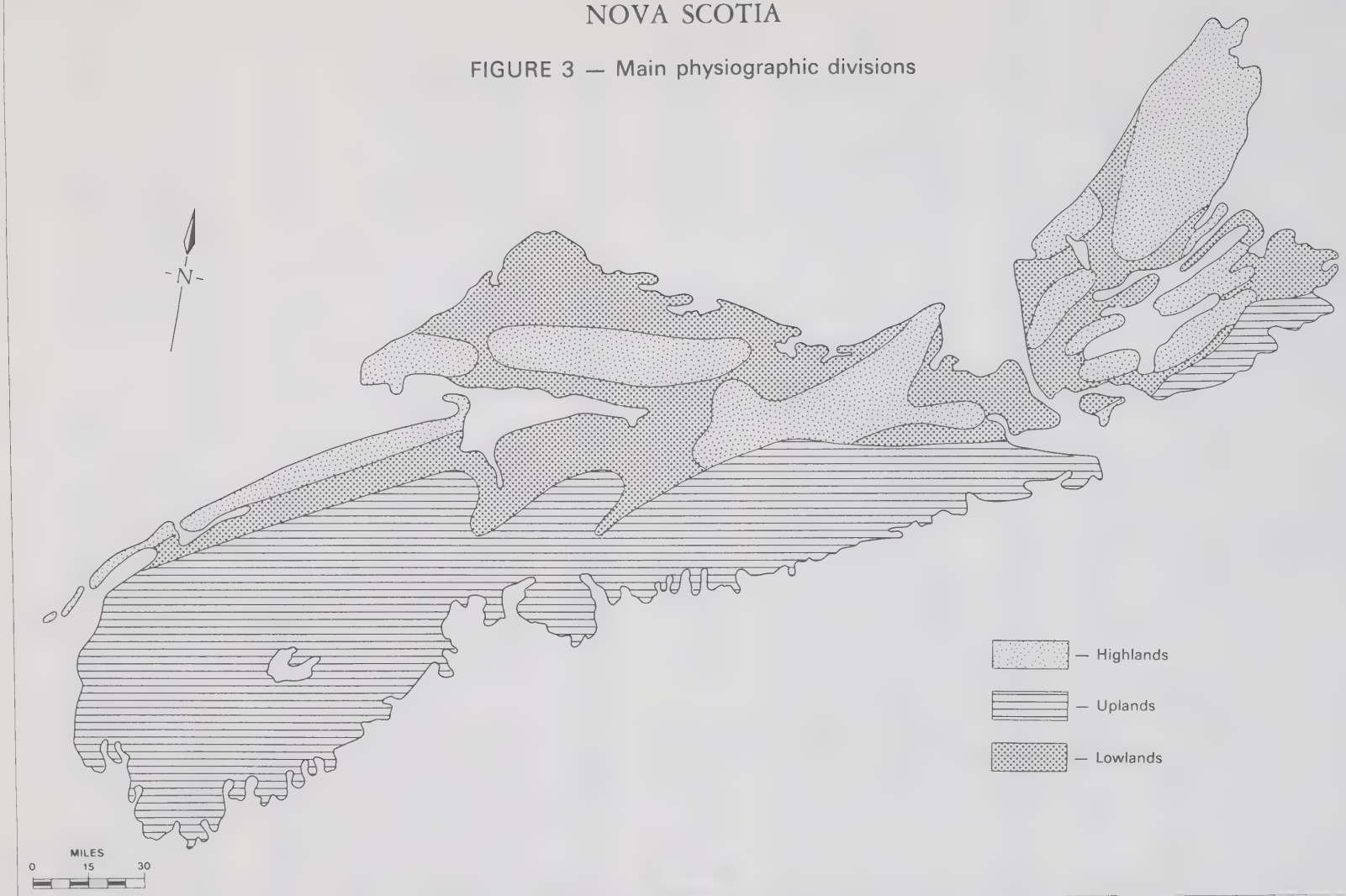
FIGURE 3 — Main physiographic divisions



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found in soils of the southern upland (area 6) but profile colors are much darker. The B horizon of these soils ranges in color from dark brown to strong brown and grades into grayish brown parent materials. The soils over much of this area are too shallow or stony (or both) to permit their use for agriculture; however, because large areas have developed from materials derived from basic igneous rocks, the natural fertility is somewhat higher than in soils developed on materials derived from acid igneous rocks, metamorphic rocks and sandstones.

The area contains a few small farms or part-time farms, but can be classed generally as non-agricultural land.

Area #2 Loamy Podzols; Luvisols; some Gleysols, Eluviated Gleysols and loamy and clayey Regosols.

This area is confined to the carboniferous lowland plain of Cumberland, North Colchester and Pictou Counties. The soils have been designated as "Carboniferous" because practically all of the parent materials have been derived from rocks of Carboniferous age. The parent materials are glacial till, dark reddish brown in color varying in texture from gravelly sandy loam to clay, with surface textures ranging from sandy loam to clay loam. There is a wide range in stoniness and relief.

Cleared areas are used mainly for production of forage in support of dairying. Some small fruits, vegetables, potatoes and grains are grown.

Area #3 Luvisols; sandy and loamy Podzols; some Gleysols, Eluviated Gleysols and loamy and clayey Regosols.

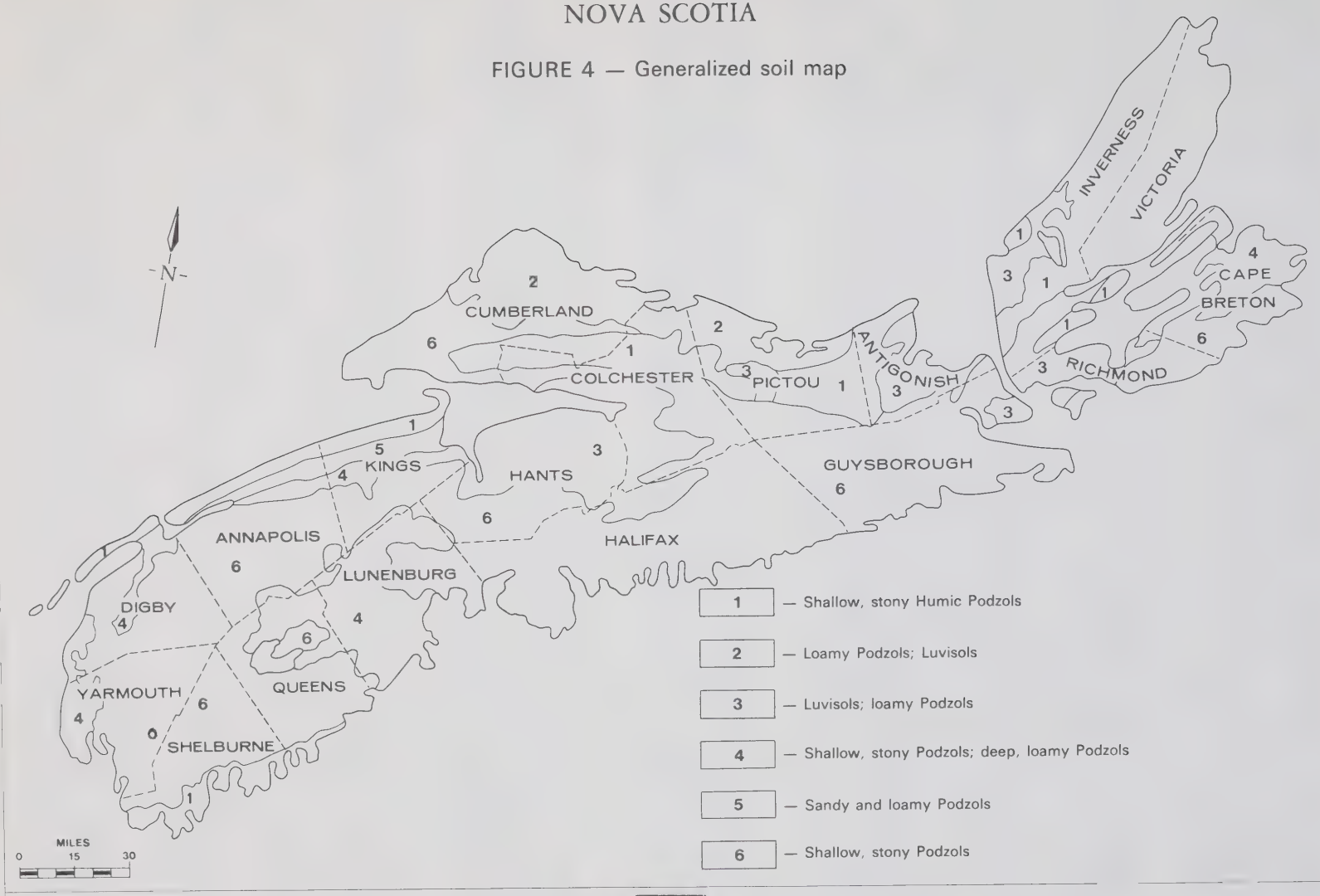
This area occupies all the lowlands of Central and Eastern Nova Scotia. Moderately fine textured soils are found on the carboniferous lowlands; moderately coarse textured soils are confined mainly to the Triassic sandstones bordering the Minas Basin. Cleared areas are used mainly for production of forage crops in support of dairying. Grain, small fruits, vegetables and potatoes are grown, predominately in the areas of moderately coarse textured soils.

Area #4 Shallow, very stony, loamy Podzols and Gleysols; Deep loamy and stony loamy Podzols; Rockland and Peat.

Soils in this group are found in Yarmouth, Digby, Lunenburg, Queens and Cape Breton Counties. They are usually stony, frequently shallow, and predominantly coarse textured. The parent materials are glacial tills derived from a wide variety of geologic materials ranging from slate, schist and quartzite in Yarmouth and Digby, slate and carboniferous material in Lunenburg and Queens, and coarse grained gray and brown carboniferous sandstones in Cape Breton County.

NOVA SCOTIA

FIGURE 4 — Generalized soil map



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In the two western areas, agriculture is confined almost entirely to cleared areas of drumlin or drumlinoid land forms. Farms and fields are small and clearing of additional land is made more difficult and costly by the presence of stone. In the Cape Breton County area farms are located on the deeper phases of normally shallow and stony soils developed on sandy loam carboniferous tills.

Cleared areas are used for forage production to support a livestock industry. Truck crops, potatoes, small grain, some tree fruits and small fruits are grown. Many of the small farms are occupied by non-farmers or part-time farmers.

Area #5 Sandy and loamy Podzols; Gleysols; clayey Regosols and Peat.

Soils of this group occurring in the Annapolis-Cornwallis Valley have developed on parent materials derived from the red Triassic sandstone and shales that underlie the Valley, with some mixture of trap rock from the North Mountain. In the eastern end of the Valley, some gray and black shale and slate modified the color of the till and in the western end, granite from the Southern Upland has had a modifying influence on the texture and color of the parent material.

Soils developed from fine textured glacial till occur along the lower slopes of both the North and South Mountains. These soils vary in texture from shaly clay to clay in the subsoil and from sandy loam to clay loam on the surface. Colors range from yellowish red through dusky red to grayish brown with reddish brown a dominant soil color in the area.

Extensive areas of the Valley floor are occupied by soils developed from glacial, or post glacial, water deposited materials, and except for a few thousand acres of fine textured marshlands, are moderately coarse to coarse textured. Because of the sandy nature of the parent material some of the coarse textured soils in the area are very droughty, a factor that has limited their agricultural development.

The Annapolis-Cornwallis Valley is the most intensively farmed area of the Province. Tree fruits, small fruits, potatoes, tobacco, canning and freezing crops, fresh vegetables, small grains and forage crops for livestock utilize most of the cleared farmland.

Area #6 Shallow, very stony, loamy Podzols and Gleysols, Rockland and Peat.

Soils of this group occupy most of the physiographic area known as the Southern Upland; south Cape Breton Island and an area flanking the Cobequid Hills.

The underlying rocks of the Southern Upland are granite, slate and quartzite. In southern Queens, Shelburne and Yarmouth Counties, the slates and quartzite have been metamorphosed into various types of schist. The parent materials of the soils vary widely in the amount of these rocks

they contain, varying from nearly pure granite, quartzite, slate or schist to equal mixtures of these materials. In general, the parent materials contain a major proportion of the rock type which they overlie. The surface soils range in texture from coarse sandy loam to loam or silt loam. The soils differ distinctly in color from the soils developed in the lowlands of the Province in that they are pale brown to olive gray. Some exceptions to this occur in Lunenburg, southern Hants and Halifax Counties where some of the reddish colored drift from carboniferous areas has been carried over by glacial ice and mixed with materials of the southern upland. In these areas the soils are finer textured and closely resemble fine textured soils found on the lowland carboniferous formations. Areas underlain by granite and quartzite are excessively stony; rock outcrops frequently occur and large boulders are an integral part of the landscape. Peat bogs occupy many of the depressional areas, but on other than depressional to very gently undulating topography the soils are moderately well to well drained.

A relatively small acreage of this area is in farms and these are located on drumlins or narrow floodplains. Most are small or part-time but there are several exceptions. Truck crops and forage for livestock are the main crops grown.

SOIL TEXTURE AND AGRICULTURAL LAND USE

All soils are made up of varying proportions of sand, silt and clay with varying proportions of organic matter, gravel, stone, water and air.

Texture is a measure of the proportion of sand to silt to clay in the soil. The content of sand approaches 95 per cent in sandy, coarse textured soil and is practically absent in the fine textured clay loam or clay. Sandy loams and sandy clay loams usually contain over 50 per cent of sand (2mm - .05 mm). Silt loams and silt clay loams usually contain over 50 per cent of silt (0.05 - .002 mm). Clays contain more than 40 per cent of clay (0.002 mm or smaller).

A. COARSE TEXTURED SOILS

1. Sands

Coarse textured soils developed on sands are found mainly in the Annapolis-Cornwallis Valley. Two smaller areas occur: south of Inverness town and west of Shubenacadie. Sand grains in these soils are composed almost exclusively of quartz and are very resistent to weathering. Consequently both the surface and subsoil layers have a sandy or loamy sand texture with resultant low moisture and nutrient holding capacity.

2. Gravels

Coarse textured soils developed on gravels are found mainly on glaciofluvial deposits (kames, eskers and outwash plains), postglacial stream terraces and some flood plains. They differ from the sandy soils in that the surface has weathered to a gravelly sandy loam and has a fairly good water-holding capacity. Water will not move readily from this surface layer through the underlying coarse fragments, so gravels retain near the surface much of the rain that falls during the growing season. The gravelly soils are less droughty than the sands but water deficiencies usually occur in July and August.

Agricultural Use

Sands are practically useless for agriculture unless irrigation equipment is available. With irrigation, they can be used for many crops in what amounts to a water-sand culture similar to hydroponics. The one exception to this generality is alfalfa which, when established, either in a very wet year or by irrigation in the new seeding stage, can produce very well. Adequate lime to neutralize the acidity, and fertility as the crop requires it, are the essential ingredients for success with this crop on the sands.

Gravels can be used for early vegetables and small fruits, preferably with irrigation. They can also be used for fall-planted cereal crops. On very droughty areas these should be tried in preference to spring planted grains.

B. MODERATELY COARSE TEXTURED SOILS

These include the sandy loams, the gravelly sandy loams, and the shaly sandy loams.

1. Sandy Loams

The preferred sandy loams are nearly level, stone free and well-drained. They have fairly good moisture holding capacity and can be used for a wide range of crops. The largest areas of well-drained sandy loams occur in Cumberland, Colchester, Pictou, Hants and Kings Counties with significant areas in Antigonish and Cape Breton Counties. Other even larger areas of not so well drained sandy loams occur, mainly in Cumberland, North Colchester and Pictou Counties. The main limitation in the use of the latter areas, other than the common high acidity and low natural fertility, is an impermeable subsoil which inhibits the downward movement of water. Drainage is parallel to the slope at from 10 - 20 inches below the surface.

2. Gravelly Sandy Loams

These occur over very wide areas of the Province and most are unsuitable for agriculture. The overriding limitation is the preponderance of stone and boulders. Small areas are suitable for farming, with reservations. These are usually fields that have been cleared of stone by early generations of farmers.

3. Shaly Sandy Loam Soils

These soils are found scattered throughout the Province but are most widely used in Hants, Lunenburg, Yarmouth, Digby, Annapolis and Kings. Extremely acid, often shallow, and frequently stony; they offer limited scope for large scale expansion in agriculture. The shaly loam drumlins in Lunenburg-Queens are very numerous and collectively they represent a large acreage of potential agricultural land. However, the size of each field is almost always limited by the size of the drumlin it occupies. Steep slopes on the north and west sections of most drumlins further reduce their usefulness for agriculture. A similar situation exists in Yarmouth County where the drumlins are smaller than in Lunenburg County.

Agricultural Use

The moderately coarse textured soils, provided they are not stony, shallow, hilly, poorly drained or droughty, can be used for the production of a wide range of crops. In Kings County they are used intensively for the production of crops for canning and freezing, fresh vegetables,

potatoes, tree fruits, and small fruits. They are also favoured for forage, corn and grain crops. Such soils are highly prized in Kings County because they offer so many alternatives in production.

Low bush blueberries grow very well in acid, shaly soils and these, together with fir or pine Christmas tree plantations, might be considered as alternative crops on lands in Lunenburg and Queens that are no longer needed to supply fluid milk, vegetables and small fruits to the south shore population. The same could be said for Yarmouth and Digby Counties, where the size and shape of the fields and the high cost of land clearing militate against expansion in the kinds of farming which require large acreages of tillable land.

C. MEDIUM-TEXTURED SOILS

These include the gravelly loams, the shaly loams, the fine sandy loams, the loams and the silt loams.

Soils of this group occur on some dykelands, on alluvial flats throughout the Province, on medium textured shaly tills, and on the fine grained tills underlying the south facing slope of the North Mountain.

Agricultural Use

The agricultural use and value of the medium textured soils varies as widely as their distribution. Probably the dykelands and alluvial flats in this category have the greatest potential for crop production because of their inherent fertility. Yet, because of risk of flooding and increased frost hazard, alluvial soils are used mainly for forage production. Relegation of the dykelands to forage production has occurred mainly due to problems of drainage, and ownership patterns. Use of these soils for a wider range of crops is indicated.

Of special importance in this textural class are the Pelton soils of the Cornwallis Valley. These soils have found favour with orchardists because of their location, texture and drainage. Yet even on gentle slopes they erode easily, and this limits their widespread use for clean cultivated crops.

D. MODERATELY FINE TEXTURED SOILS

These include sandy clay loam, silt clay loams and clay loams.

1. Sandy Clay Loam Soils

These include, among others, the Kentville soils found in the Annapolis-Cornwallis Valley and the Wolfville soils of widespread occurrence in the Valley and on drumlins of the southern upland. One characteristic they share, in addition to texture, is a compact, relatively impermeable, subsoil with seepage, i.e. internal drainage parallel to the slope.

2. Silty Clay Loam Soils

These are confined almost entirely to dykelands, an area they share with soils of silt loam texture. Although relatively fertile, they have to be protected by dykes from salt water flooding. Artificial drainage is necessary for optimum use.

3. Clay Loams

These soils occur over much of the lowland area of north, central and eastern Nova Scotia. They are seldom well-drained and, even when drained either by tile or open ditch, are slow to warm up in spring and present tillage problems under clean cultivation.

Agricultural Use

As a general rule clay content above a rather limited level indicates a restricted range of use for soils in Nova Scotia.

Most of our moderately fine textured soils do not drain quickly and their use is limited to grain and forage crops. This is not to say that a wider range of crops cannot be grown but that more difficulties are experienced in growing them on most of the finer textured soils. The Falmouth soils around Windsor, and some areas of Wolfville soils in Kings County, are exceptions to this rule. The latter soils often have a sandy loam surface and, while not as early as the well-drained sandy loams, are commonly used for tree fruits, small fruits, vegetables, forage crops, and grain.

Grains and corn for silage are grown on the clay loam soils but yields are profoundly influenced by the season, date of planting and problems of maturing and harvesting the crop.

SOIL TEXTURE AND DRAINAGE

From the standpoint of ease of drainage the soils of Nova Scotia can be divided into five broad groups.

1. Sands and loamy sands

These soils are either well-drained or excessively drained except in flat or depressional areas with a high water table. There is no special merit in draining these areas except for the production of high value crops, or to improve the use of surrounding fields.

2. Sandy loams and loams

These soils range from well-drained to poorly drained. Poorly drained areas in otherwise well-drained fields should be tile drained. These are our most versatile soils. They are used to produce all crops common to the Province.

3. Silt loams to silty clay loams

These occur on marshlands and some alluvial river flats. Extensive drainage is usually necessary on these soils; however, the cost is offset by the higher natural fertility and lower requirements for lime and fertilizer to maintain the soils in a productive state. These soils are used mainly for grass, but can be used to grow a much wider range of crops.

4. Sandy clay loams and clay loams with permeable subsoil

These are moderately well drained to well drained. Drainage, when needed at all,is usually to remove water from a low spot in a field or to cut off seepage on a long slope. These soils are used for a wide range of crops including tree fruits, small fruits and vegetables.

5. Sandy clay loams and clay loams with impermeable subsoil

These soils range from moderately well drained to poorly drained, but most areas are imperfectly drained. Much of the dairy farming of the Province is on this class of soils. Slopes are usually sufficiently steep to remove surface water.

Subsurface drainage is mainly down the slope over the impermeable subsoil. Cut-off ditches on long slopes will remove excess seepage water. These soils are mainly suited to the production of grasses and legumes. Grain yields are reduced by late planting and/or poor harvest conditions in two years out of five.

Moderate expenditures for drainage can be of great value when:

- the soil is relatively fertile as in Marshland soils and the costs of drainage work and upkeep can be balanced against lower costs for lime and fertilizer;
- the drainage of wet areas in otherwise well-drained fields makes it possible to work the entire field earlier, and at one time;
- a nominal expenditure for cut-off ditches will protect significant areas from seepage or overflow;
- a modest expenditure per acre will lower the water table in flat areas of relatively pervious soils.

THE SOIL CAPABILITY CLASSIFICATION FOR AGRICULTURE[1]

The soil capability classification for agriculture purposes is one of a number of interpretive groupings that may be made from soil survey data. As with all interpretive groups, the capability classification is developed from the soil mapping units. In this classification the mineral soils are grouped into seven classes according to their potentialities and limitations for agricultural use. The first three classes are considered capable of sustained production of common cultivated crops, the fourth is marginal for sustained arable culture, the fifth is capable of use only for permanent pasture or hay, the sixth is capable of use only for wild pasture, while the seventh is for soils and land types (including rock outcrop and small unmappable bodies of water) considered incapable of use for arable culture or permanent pasture. While the soil areas in classes one to four are capable of use for cultivated crops they are also capable of use for perennial forage crops. Soil areas in all classes may be suited for forestry, wildlife and recreation. For the purposes of this classification, trees, tree fruits, cranberries, blueberries and ornamental plants that require little or no cultivation are not considered as cultivated or common field crops.

The capability classification, applied in Canada, consists of two main categories: (1) the capability class, and (2) the capability subclass.

The *class*, the broadest category in this classification, is a grouping of subclasses that have the same *relative degree of limitation or hazard*. The limitation or hazard becomes progressively greater from Class 1 to Class 7. The class indicates the general suitability of the soils for agricultural use.

The *subclass* is a grouping of soils with *similar kinds of limitations and hazards*. It provides information on the kind of conservation problem or limitation. The class and subclass together provide the map user with information about the degree and kind of limitation for broad land-use planning, and for the assessment of conservation needs.

The capability classification is applied to virgin as well as to presently cultivated lands, with the exception of organic soils. Research data, recorded observations, and experience are used as the basis for placing soils in capability classes and subclasses. In areas where such information is lacking, soils are placed in capability classes and subclasses by interpretation of soil characteristics in accordance with experience gained on similar soils elsewhere. The level of generalization of the soil capability

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[1] The Canada Land Inventory, Soil Capability Classification for Agriculture. Report No. 2. Ottawa, 1965.

classification is indicated by the map scale on which the information is published.

This classification is not a guide to the most profitable use of land, but it is an inventory of our agricultural soil resources and a guide to better land use in Canada.

ASSUMPTIONS

This soil capability classification is based on certain assumptions which must be understood by those using the soil capability maps and statistical data derived from these maps if they are to obtain full benefit from such information and avoid making erroneous deductions.

1. The soil capability classification is an interpretive classification based on the effects of combinations of climate and soil characteristics, on limitations in use of the soils for agriculture, and on their general productive capacity for common field crops. Shrubs, trees or stumps are not considered as limitations to use unless it is unfeasible to remove them.

2. Good soil management practices that are feasible and practical under a largely mechanized system of agriculture are assumed.

3. The soils within a capability class are similar with respect to degree, but not to kind of limitations in soil use for agricultural purposes. Each class includes various kinds of soil and many of the soils within any one class require different management and treatment. The subclass provides information on the kind of limitation, and the class indicates the intensity of the limitation. Capability Class 1 has no subclasses. Information for specific soils is included in soil survey reports and in other sources of information.

4. Soils considered feasible for improvement by draining, by irrigating, by removing stones, by altering soil structure, or by protecting from overflow, are classified according to their continuing limitations, or hazards in use after the improvements have been made. The term "feasible" implies that it is within present day economic possibility for the farmer to make such improvements and it does not require a major reclamation project to do so. Where such major projects have been installed, the soils are grouped according to the soil and climatic limitations that continue to exist. A general guide to what is considered a major reclamation project is that such projects require co-operative action among farmers, or between farmers and governments. (Minor dams, small dykes, or field conservation measures are not included.)

5. The capability classification of the soils in an area may be changed when major reclamation works are installed that permanently change the limitations in use for agriculture.

6. Distance to market, type of roads, location, size of farms, characteristics of land ownership and cultural patterns, and the skill or resources of individual operators are not criteria for capability groupings.

7. Capability groupings are subject to change as new information about the behaviour and responses of the soils becomes available.

CAPABILITY CLASSES

Class 1 - *Soils in this class have no significant limitations in use for crops.*

Soils in Class 1 are level or have very gentle slopes; they are deep, well to imperfectly drained and have a good water holding capacity. They are easily maintained in good tilth and productivity, and damage from erosion is slight. They are moderately high to high in productivity for a wide range of field crops adapted to the region.

Class 2 - *Soils in this class have moderate limitations that restrict the range of crops, or require moderate conservation practices.*

Soils in Class 2 are deep and have a good water holding capacity. The limitations are moderate and the soils can be managed and cropped with little difficulty. The soils are moderately high to high in productivity for a fairly wide range of field crops adapted to the region.

The limitation of soils in this class may be any one of the following: adverse regional climate; moderate effects of accumulative undesirable characteristics; moderate effects of erosion; poor soil structure or slow permeability; low fertility correctable with consistent moderate applications of fertilizers, and usually lime; gentle to moderate slopes; occasional damaging overflow; and wetness correctable by drainage but continuing as a moderate limitation.

Soils in this class are not generally suited to as wide a range of crops as the soils in Class 1. Also more intensive conservation measures, tillage practices, or special soil conserving systems may be required. The combinations of practices vary from place to place depending on the climate, soil and regional cropping systems.

Class 3 - *Soils in this class have moderately severe limitations that restrict the range of crops, or require special conservation practices.*

Soils in Class 3 have more severe limitations than those in Class 2 and conservation practices are more difficult to apply and maintain. Under good management these soils are fair to moderately high in productivity for a fairly wide range of field crops adapted to the region.

In this class the limitations that restrict cultivation, ease of tillage, planting and harvesting, the choice of crops, the application and maintenance of conservation practices, are a combination of two of those

described under Class 2, or one of the following: moderate climatic limitations including frost pockets; moderately severe effects of erosion; intractable soil mass or very slow permeability; low fertility correctable with consistent heavy applications of fertilizers and usually lime; moderate to strong slopes; frequent overflow accompanied by crop damage; poor drainage resulting in crop failures in some years; low water holding capacity or slowness in release of water to plants; stoniness sufficiently severe to seriously handicap cultivation and necessitating some clearing; restricted rooting zone; moderate salinity.

Each soil in this class may have one or more alternative uses or practices required for use but the alternatives may be fewer than for soils in Class 2.

Class 4 - *Soils in this class have severe limitations that restrict the range of crops, or require special conservation practices, or both.*

Soils in Class 4 have such limitations that they are only suitable for a few crops, or the yield for a range of crops is low, or the risk of crop failure is high. The limitations may seriously affect such farm practices as the timing and ease of tillage, planting and harvesting, and the application and maintenance of conservation practices. These soils are low to medium in productivity for a narrow range of crops, but may have higher productivity for a specially adapted crop.

The limitations include the adverse effects of a combination of two or more of those described in Classes 2 and 3, or one of the following: moderately severe climate; very low water holding capacity; low fertility, i.e. difficult or unfeasible to correct; strong slopes; severe past erosion; very intractable mass of soil or extremely slow permeability; frequent overflow with severe effects on crops; severe salinity causing some crop failures; extreme stoniness requiring considerable clearing to permit annual cultivation; very restricted rooting zone, but more than one foot of soil over bedrock or an impermeable layer.

Class 4 soils in subhumid, and some arid, regions may produce good yields of regionally cultivated crops in years of high rainfall, low yields in years of average rainfall and failures in years of below average rainfall. During the years of low precipitation, even though no crop is expected, special management practices are required to minimize wind erosion, maintain productivity and conserve moisture. These measures include emergency tillage and crops used only for the primary purpose of preventing soil deterioration. These treatments and others must be applied more frequently and more intensively than on soils in Class 3.

Class 5 - *Soils in this class have very severe limitations that restrict their capability to producing perennial forage crops, and improvement practices are feasible.*

Soils in Class 5 have such serious soil, climatic or other limitations that they are not capable of use for sustained production of

annual field crops. However, they may be improved by the use of farm machinery for the production of native or tame species of perennial forage plants. Feasible improvement practices include clearing of bush, cultivation, seeding, fertilizing and water control.

The limitations in Class 5 include the adverse effects of one or more of the following: severe climate; low water-holding capacity; severe past erosion; steep slopes; very poor drainage; very frequent overflow; severe salinity permitting only salt-tolerant forage crops to grow; stoniness or shallowness to bedrock that make annual cultivation impractical.

Some soils in Class 5 can be used for cultivated field crops provided unusually intensive management is used. Some of the soils in this class are also adapted to special crops such as blueberries, orchard crops, or the like, requiring soil conditions unlike those needed by the common crops. Cultivated field crops may be grown in Class 5 areas where adverse climate is the main limitation,but crop failures occur under average conditions.

Class 6 - *Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.*

Soils in Class 6 have some natural sustained grazing capacity for farm animals, but have such serious soil, climatic, or other limitations as to make impractical the application of improvement practices that can be carried out in Class 5. Soils may be placed in this class because their physical nature prevents improvement through the use of farm machinery, or the soils are not responsive to improvement practices, or because of a short grazing season, or because stock watering facilities are inadequate. Such improvement as may be effected by seeding and fertilizing by hand or by aerial methods shall not change the classification of these soil areas.

The limitations in Class 6 include the adverse effects of one or more of the following: very severe climate; very low water holding capacity; very steep slopes; very severely eroded land with gullies too numerous and too deep for working with machinery; severely saline land producing only edible, salt tolerant, native plants; very frequent overflow allowing less than 10 weeks effective grazing; water on the surface of the soil for most of the year; stoniness or shallowness to bedrock that makes any cultivation impractical.

Class 7 - *Soils in this class have no capability for arable culture or permanent pasture.*

The soils or lands in Class 7 have limitations so severe that they are not capable of use for arable culture or permanent pasture. All classified areas (except organic soils) not included in Classes 1 to 6 shall be placed in this class. Bodies of water too small to delineate on the map are included in this class.

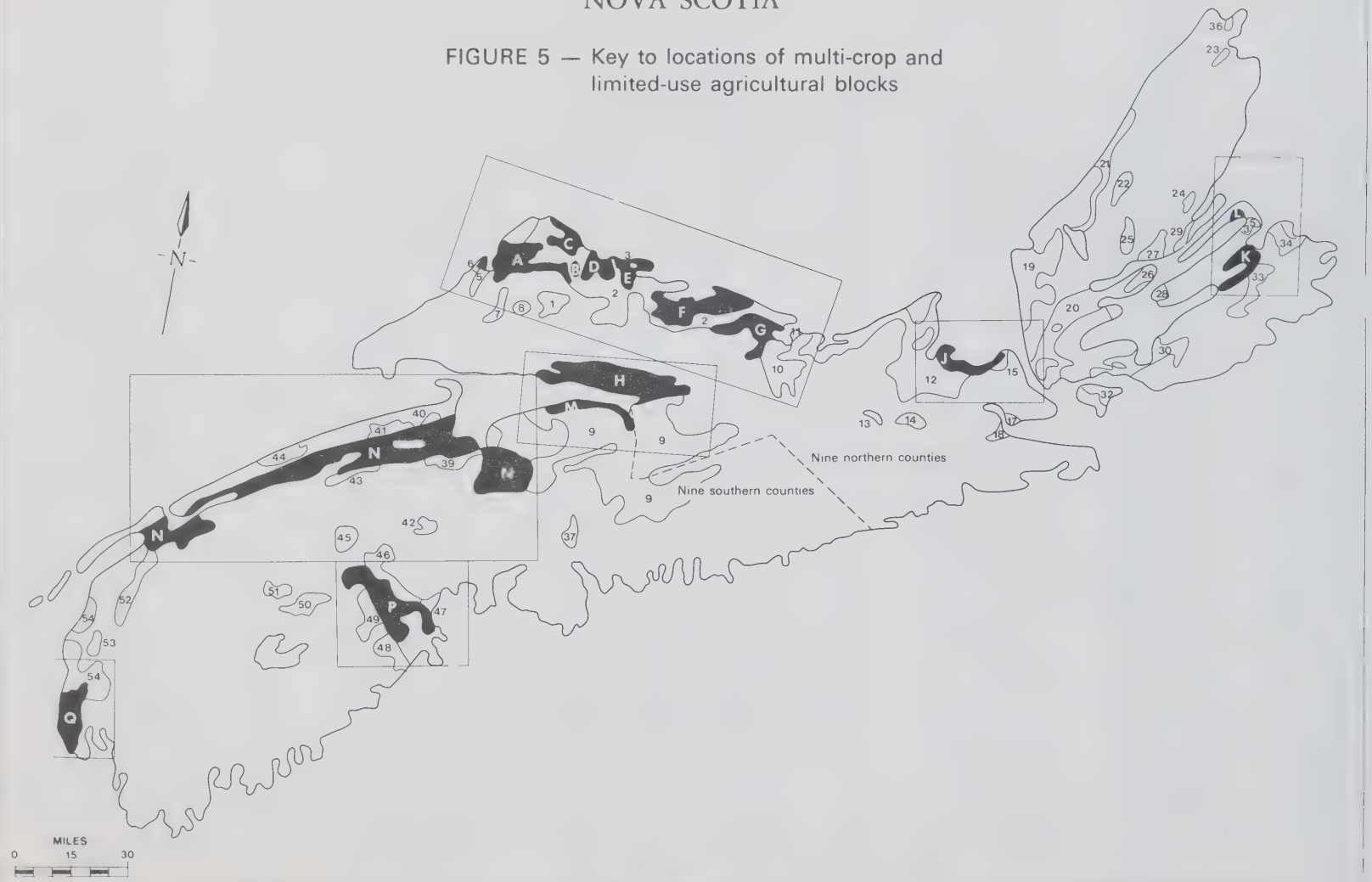
Class 7 soils may or may not have a high capability for trees, native fruits, wildlife and recreation. Hence no inferences can be made as to the capability of the soils and land types in this class beyond the scope of their capability for agriculture.

ORGANIC SOILS

This interpretive soil capability classification is not applied to organic soils since, in general, there is insufficient information on these organic soil areas to make such an interpretive judgement.

NOVA SCOTIA

FIGURE 5 — Key to locations of multi-crop and limited-use agricultural blocks



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AGRICULTURAL LAND BLOCKING METHODOLOGY

From an appraisal of topographic, climatic and morphologic characteristics, as recorded in agricultural land use and land capability maps, we may state that there are three main classes of soils and describe them in general terms as follows:

1. Multi-crop soils

Soils useful for commercial production of a wide range of crops including many or all of the following: tree fruits, small fruits, vegetables, small grains, forage crops, forestry.

2. Limited-use soils

Soils useful for commercial production of a narrow range of crops (chiefly forage and forestry) with limited use for small grains, small fruits, vegetables and tree fruits.

3. Non-agricultural soils[1]

Soils generally unsuitable for commercial production of agricultural crops under the present and foreseeable economic conditions.

The feasibility of soil use for agriculture is taken into consideration in arriving at soil capability ratings. Yet many factors, having a direct bearing on the economics of agriculture, have been omitted. Some of these factors are: distance to and availability of markets; characteristics of land ownership; cultural patterns; and the presence or absence of trees, shrubs, or stumps. Individually or collectively these factors may have a marked affect on the development and viability of the agricultural industry.

A more realistic appraisal of the agricultural potential of the Province can be reached by superimposing these largely economic factors on the agricultural land base. This has been done through the agricultural land blocking process, an operation in which significant areas of land having an indicated potential for agricultural use are delineated on a map.

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[1] The term "non-agricultural soil" is valid only in an economic sense. All soils in the Province have some agricultural capability if the costs of improvements and maintenance are ignored. Some soils in this general group may have value for lowbush blueberries, cranberries, or pasture. It may be economically feasible to use irrigation on other areas for the production of high acre value crops. However, equivalent expenditures on better soils should result in higher net returns for these crops.

Two categories of agricultural land were blocked out and designated as Multi-Crop Agricultural Blocks and Limited-Use Agricultural Blocks.

Measurements were made of present land-use categories in each agricultural class and subclass within each block of land. Cleared and total acreages of soils in various agricultural land capability classes of multi-crop blocks are shown in Tables 1 and 5, and for limited-use agricultural blocks in Tables 2 and 6. These tabulations are further summarized in Table 9. The locations of the agricultural blocks are indicated in Figure 5.

Guidelines used to categorize the blocks are listed below. They include elements of the agricultural land capability classification, socio-economic and other factors likely to bear strongly on the use of the land for agriculture.

1. Multi-crop agricultural blocks have:

- not less than 1,000 acres of cleared and arable land;
- a significant acreage of cleared land suitable for production of crops other than forage;[1]
- accessibility to local markets and/or distribution centres;
- a high proportion of land already cleared.

2. Limited-use agricultural blocks attributes are:

- each block should contain a minimum of 500 acres of cleared land, if separated from other agricultural blocks by more than three miles;
- the land base within the blocks should have a Class 3 capability for agriculture with a minimum of inclusions of Class 4, or poorer agricultural land; and
- the blocks must be accessible to distribution points or marketing centres.

Non-Agricultural Land

Areas outside the multi-crop and limited-use blocks have been designated as non agricultural land. While small pockets of agricultural activity persist, they do not meet the minimum requirements considered essential for development. Some thousands of acres are used for lowbush blueberry production, other areas are in various stages of agriculture, abandonment or reforestation.

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[1] This is usually equated with Class 2 soils. However, some Class 3 and 4 soils are suited for production of a wide range of crops, or specialized crops of high acre-value.

Even with a marked upturn in the agricultural economy and consequent increased pressure for agricultural land, only a very limited amount of the area now classed as non agricultural is likely to undergo a change in status.

FARM MODELS

The investment and income possibilities for a number of different livestock enterprises have been investigated by Carr and Associates[1] and by the Farm Management Branch of the Nova Scotia Department of Agriculture. While there is some variation in the projected profit pictures, enterprises such as hogs, poultry, fluid milk, replacement stock and grain farming all show promise.

Except for small fruits, vegetables and tree fruits, land based agricultural enterprises can be grouped into two general types:

Category A	Hog/Beef
	Poultry/Beef
	Dairy/Fluid Milk
	Dairy/Replacement Stock
Category B	Grain
	Grain/Hog
	Grain/Poultry
	Grain/Beef

This report assumes that farms in Category A can operate at a satisfactory level of efficiency with a cleared land base of 100-200 acres, or an average of 150 acres. Dairy herds producing manufacturing milk or butter fat have been omitted because there is no apparent size of operation which will give a satisfactory return for labour and capital without heavy and continuing subsidization.

This report assumes that farms in Category B will require a land base of about 400 acres for efficient use of equipment and labour. On the grain farm no complementary livestock enterprise is visualized, but units of equivalent size can be developed using hogs, poultry and beef as "markets" for the grain produced.

Hogs and Poultry

Profitable hog and poultry farms have been established throughout the Province, most of them dependent on the land base only as a disposal area for animal wastes. The feed requirements for these enterprises are

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[1] Atlantic Development Board. Maritime Farm Enterprise Analysis. Appendix, Background Study No. 2. Ottawa: Queen's Printer for Canada, 1969.

largely met by importing grains from Western Canada and Ontario. Hog and poultry farms, under existing conditions, do not make reliable yardsticks for projecting agricultural land use. However, maximum use of land for disposal of manure could be attained by an integrated hog/beef or poultry/beef unit which could take full advantage through forage production of the high fertility and soil improvement values in hog and poultry manures.

Dairy Farms - Fluid Milk

Except for minor distributional problems and short seasonal periods of scarcity, the fluid milk market is adequately supplied by producers now active in this field. Since the potential provincial market for this product is closely tied to population growth and, if anything, is likely to be affected adversely by milk substitutes over the next few years, no marked increase can be seen in numbers of farmers profitably engaged in the industry. More probably, these numbers will be reduced below the present level as farm size, herd numbers and production per cow increases.

Dairy Farms - Replacement Stock

Fluid milk producers on many farms have neither the time nor the land resource to effectively produce their own herd replacements, yet the dairy herds in the Province are a prime source of good quality calves. With good management, such calves can be raised on dairy herd replacement farms for resale to fluid milk farms, or for export markets.

Grain Farm

The staff of the Farm Management Branch, Nova Scotia Department of Agriculture, has prepared an income and investment model of a 400 acre grain farm. The farm is planted to 300 acres of barley with 100 acres, or 25 per cent of the area, assumed to be in forage each year. This assumes that all cleared Class 2 and some acreage of specific subclasses of 3 and 4 land can be used for profitable grain production.

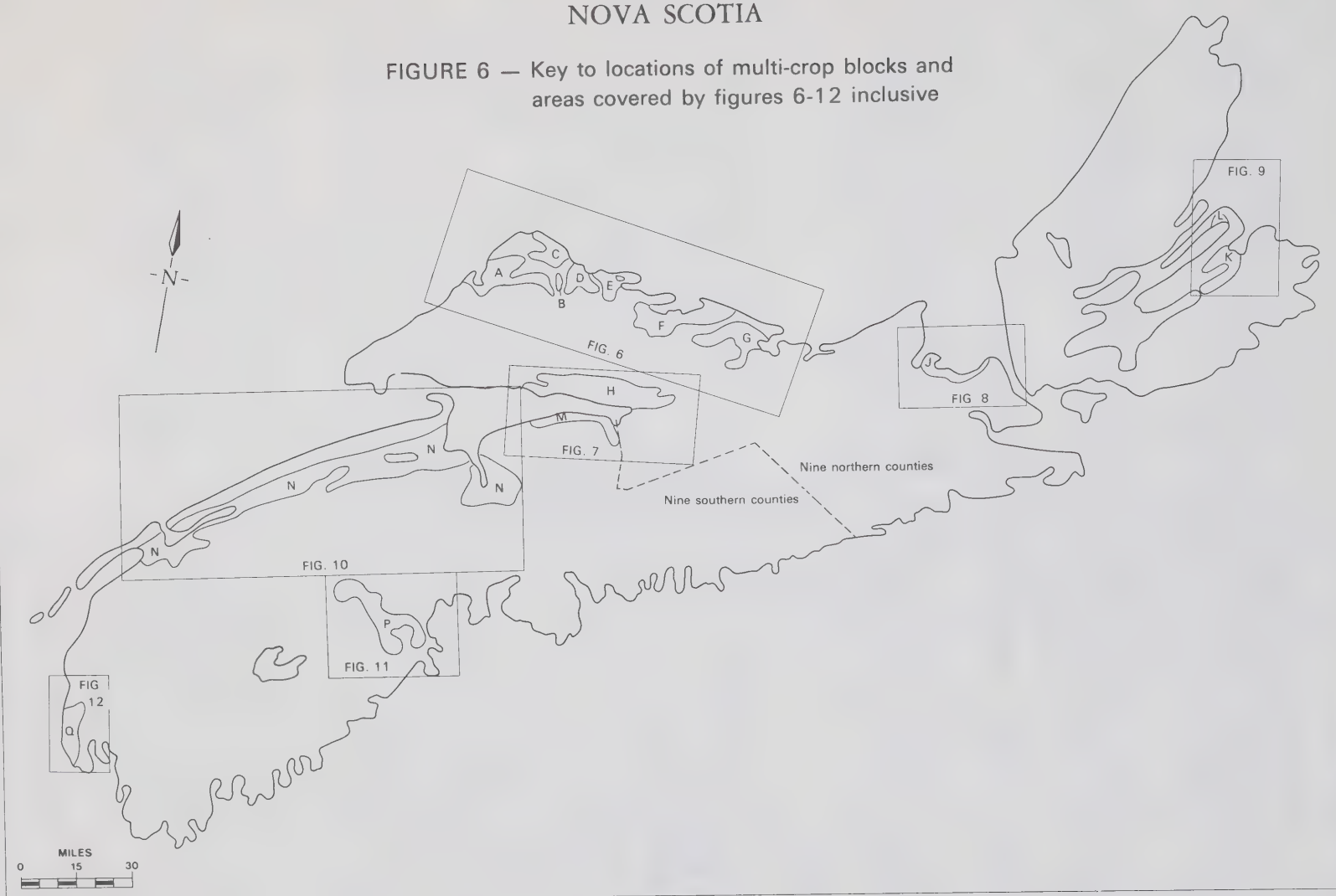
Cleared Non-Arable and Forested Land in Multi-Crop Blocks

Areas of land now cleared but not suitable for tillage may be retained as permanent pasture, developed for blueberries, or reforested (Table 4). Because of the intricate pattern of cleared and forested land consolidation of forested areas into forest management blocks of large acreage is not generally feasible. The advantages of a forest woodlot to the operation of a farm are fairly obvious; but aside from this, most of the soils now forested have Class 2 or 3 agricultural capability and are areas for potential agricultural expansion should the need arise.

With some exceptions, forested areas in multi-crop blocks should remain as integral parts of present or potential farms.

NOVA SCOTIA

FIGURE 6 — Key to locations of multi-crop blocks and areas covered by figures 6-12 inclusive



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MULTI-CROP BLOCKS

Fifteen separate areas falling into the category of multi-crop blocks[1] were outlined for the Province. Eleven, with a total area of 456,487 acres (Figure 6:blocks A to L) are located in the nine northern counties; the remaining four (Figure 6:blocks M to Q) are in the nine southern counties.

As the name "multi-crop" implies, substantial acreages of the soils within the limits of these blocks are suited to the production of a wide range of crops. Yet the size and location of the blocks suggests widely different emphasis in agricultural use.

NORTHUMBERLAND SHORE - NEW BRUNSWICK BORDER TO PICTOU

The seven blocks in this area[2] can be discussed as one. They are contained within an area 15 miles wide and 80 miles long bordering Northumberland Strait. Included also in this area are limited use blocks 1-10, excluding #9, which occupy a further 347,466 acres (Table 2).

Historical

The history of agriculture in this area records few bright spots. Throughout the early years, a type of mixed farming with beef cattle and hay marketing prevailed. Later, dairying assumed dominance over much of the area and prevails to this day. It is based primarily on forage, dairy, butter, or manufacturing milk operations, with only limited markets available for fluid milk. In earlier years, hay produced on Amherst marshlands and the surplus from north shore farms, found a ready market in towns and lumbering operations. While not generally recognized at the time, the advent of the car and tractor put an end to the cash hay market and seriously reduced the viability of agriculture on most of the Northumberland Shore. The alternative markets still open for hay were through dairy, beef and sheep herds. The absence of a fluid milk market of any size forced dairymen to sell their milk at manufacturing or butterfat prices, chronically too low to provide more than a subsistence income, even for relatively well-managed operations. Beef and sheep farmers likewise found the returns to capital and labour not sufficient to warrant the development of large, and possibly more viable, operations with existing levels of management or capability.

From the beginning of agriculture in this area, land tenure was chaotic. Further subdivision, brought through settlements of estates, compounded the land tenure problem to the point where private attempts to assemble farm units of viable size have in most instances been a frustrating exercise in futility. Historically the agricultural use of soils in this area has been hampered by land tenure, philosophy and managerial capability of

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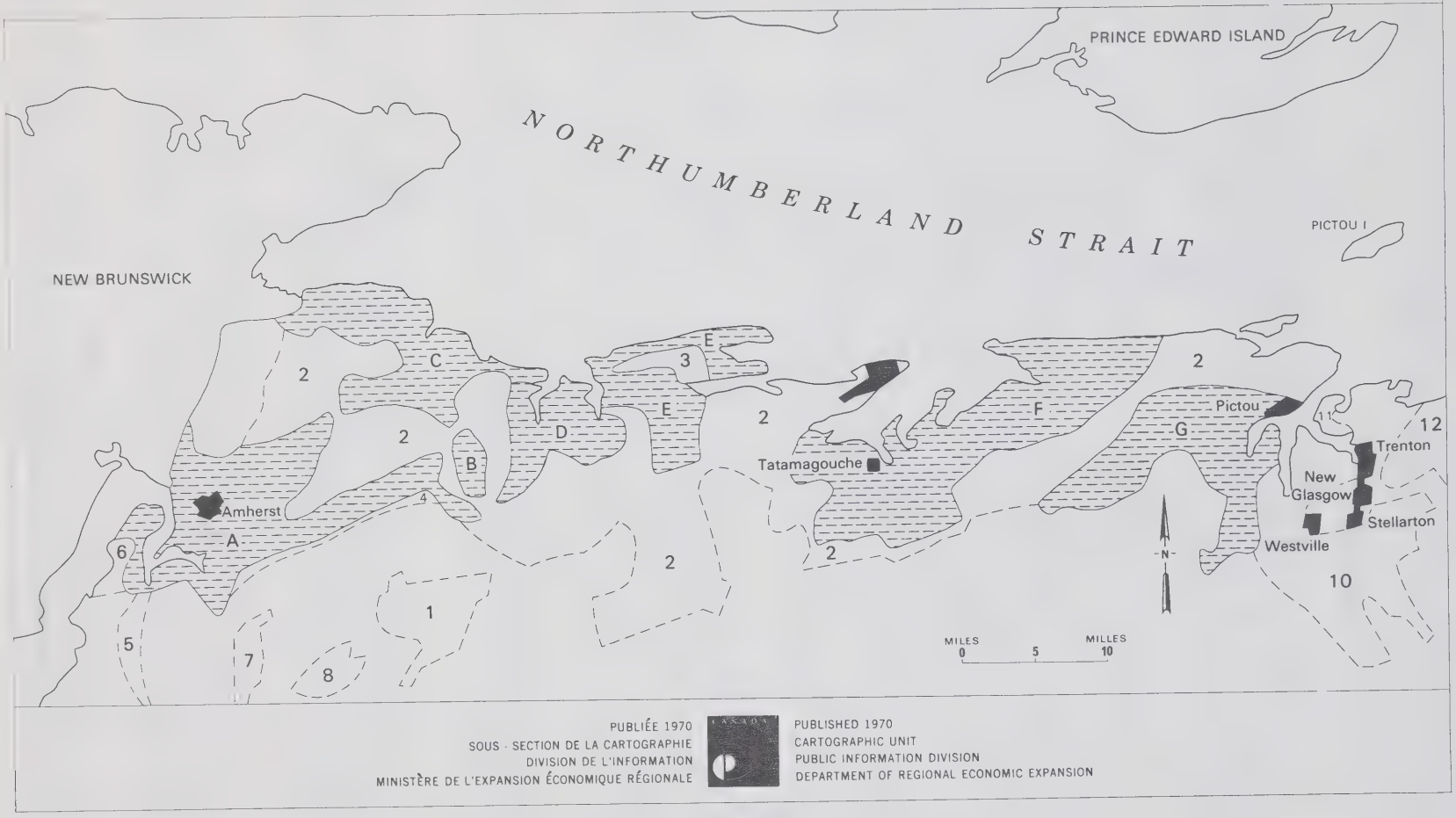
[1] 930,301 acres or 1,470 square miles.

[2] Blocks A to G, 291,334 acres (Figure 7)

Figure: 7 — Multi-crop and limited-use blocks-Northumberland Shore



many farmers and an almost complete absence of agriculturally oriented marketing, storage and processing facilities.

The Soil and Crop Potential

Soils of the Northumberland Shore are not unlike those found in parts of Prince Edward Island. Given equivalent inputs they should be as profitable to farm as the Island soils, and possibly more so, since farmers on the Northumberland Shore do not have to cope with the delays and vagaries of a ferry transportation link.

Within the seven multi-crop blocks there are nearly 54,000 acres of cleared Class 2, over 42,000 acres of cleared Class 3, and 4,500 acres of cleared Class 4 land. The Class 2 and some areas of Class 3 soils are suited to production of a wide range of crops including small grains, canning and freezing crops, small fruits, potatoes, fresh vegetables, forage crops and forestry. The presence in this area of a substantial acreage of soils suited to the production of such diverse crops suggests the possibility that private enterprise may find the area attractive for developing large, vertically integrated, or corporate, production units. The development of such enterprises usually requires a radical departure from the traditional forage-livestock farming which has dominated the area for so long. Further, it is likely that in the short term few such enterprises can be generated from capital and human resources now in the area.

Production of small grains as a major enterprise is an exception to the above generality in that it does not require a complete restructuring of the agricultural industry, but can be introduced and expanded with existing farm units. Further, the availability of crop insurance for grain production now makes possible the development of grain farms of substantial acreage without risk of catastrophic losses for the operator.

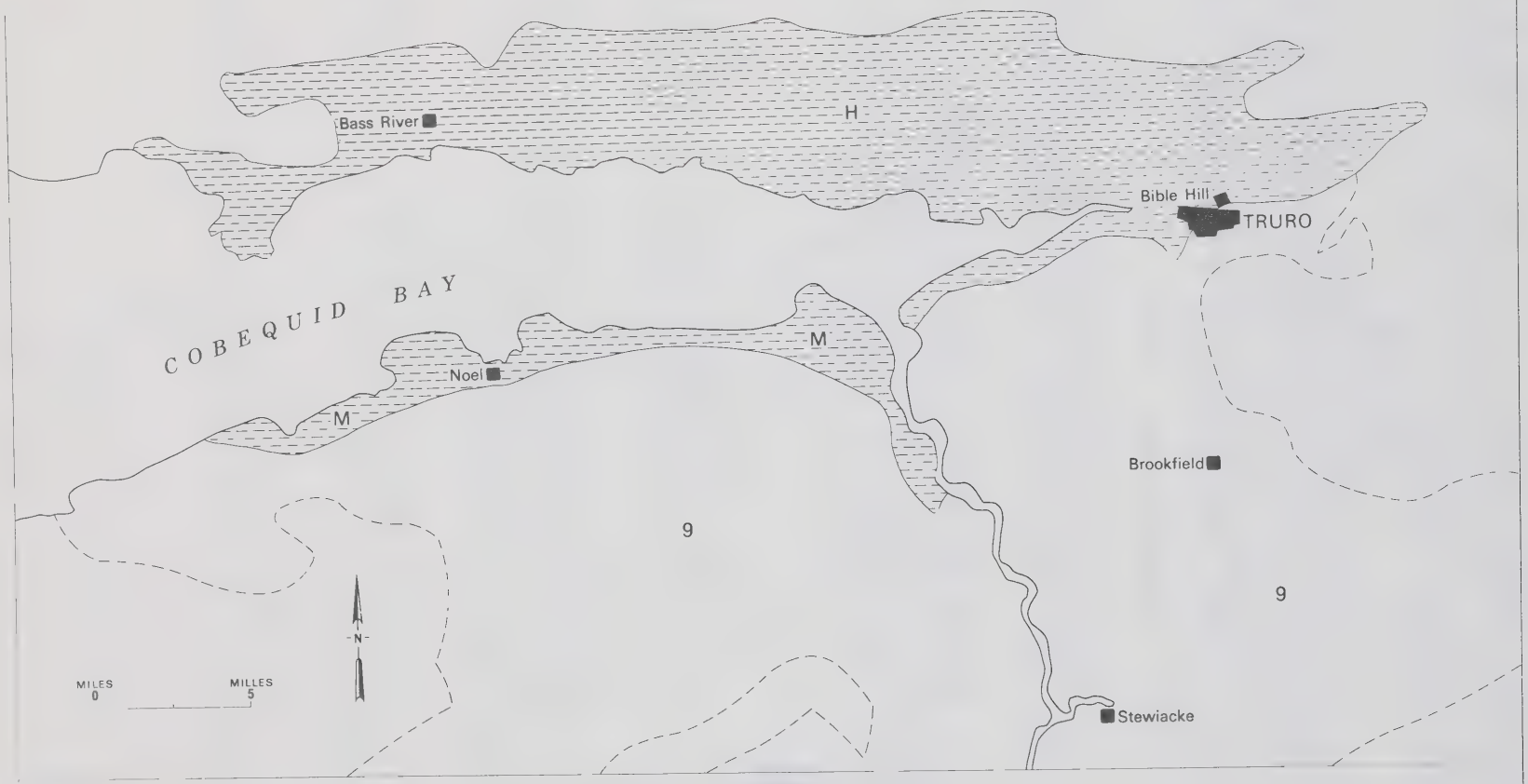
Of the 101,000 acres of cleared land in the multi-crop blocks of the Northumberland Shore, about 98,000 are suitable for forage production; of this, nearly 60,000 acres are suitable for a variety of crops including small grains.

Successful utilization of available and suitable soils of the Northumberland Shore for small grain production depends very largely on the installation of grain drying, storage, grading and marketing facilities so that small grains produced in the area can efficiently be channelled into existing local or provincial markets.

Private capital is now providing an embryo infrastructure to handle small grain production in the Malagash area. This venture, if successful, will provide the impetus for rapid expansion of small grain production on suitable soils throughout the entire Northumberland region.

Expansion of small grain production need not take place at the expense of the local livestock industry. Some 38,000 acres of cleared land within the multi-crop blocks is primarily suited to forage and convertible to

Figure: 8 — Multi-crop and limited-use blocks-Cobequid Shore



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meat and dairy products. Further, it is unlikely, even on grain farms, that more than 75 per cent of the available land would, or should, be in grain each year, leaving an additional 15,000 acres or a total of 53,000 acres available for forage production.

In theory, 650 general livestock (Category A) farms averaging 150 acres of cleared land can be accommodated in the seven multi-crop blocks of the Northumberland Shore without recourse to clearing significant acreages of woodland. However, if the land deemed suitable is used for growing grain, then about 150 of these (Category B) units could be established together with 250 general livestock (Category A) units on the residual forage crop land.

COBEQUID SHORE - ECONOMY - TRURO - NOEL

The soils and climate over these two blocks are quite similar, except for the Noel Shore area, which comes under the modifying influence of the Minas Basin and has a higher than average frost-free period.

Inland, from Blocks H and M and extending south into Halifax County and easterly into the Stewiacke and Musquodoboit Valleys, is limited-use block #9 with a total area of 568,056 acres (Tables 4 and 8). This area is a major segment of the Central Nova Scotia milk shed, supplying the Halifax-Dartmouth metropolitan area.

Historical

Agricultural development in the Cobequid Bay area followed a pattern similar to that of the Cornwallis Valley, with several important exceptions due partly to a more rigorous climate in the Cobequid Bay area.

Settlements, started by the French and later taken over by the English, centred on the fertile dykelands surrounding Cobequid Bay and on alluvial flats of the river valleys. Farming spread from this base to the surrounding sandy loam upland soils, made more productive by generous applications of mud from the tidal marshes.

Dairy farms which supply fluid milk to Truro and the Halifax-Dartmouth market have, over the last twenty-five years, dominated the agricultural economy of the area. These units are rapidly becoming larger, more efficient and fewer in number.

Potatoes, vegetables and small fruits, particularly strawberries, have been produced for many years mainly to supply the local market.

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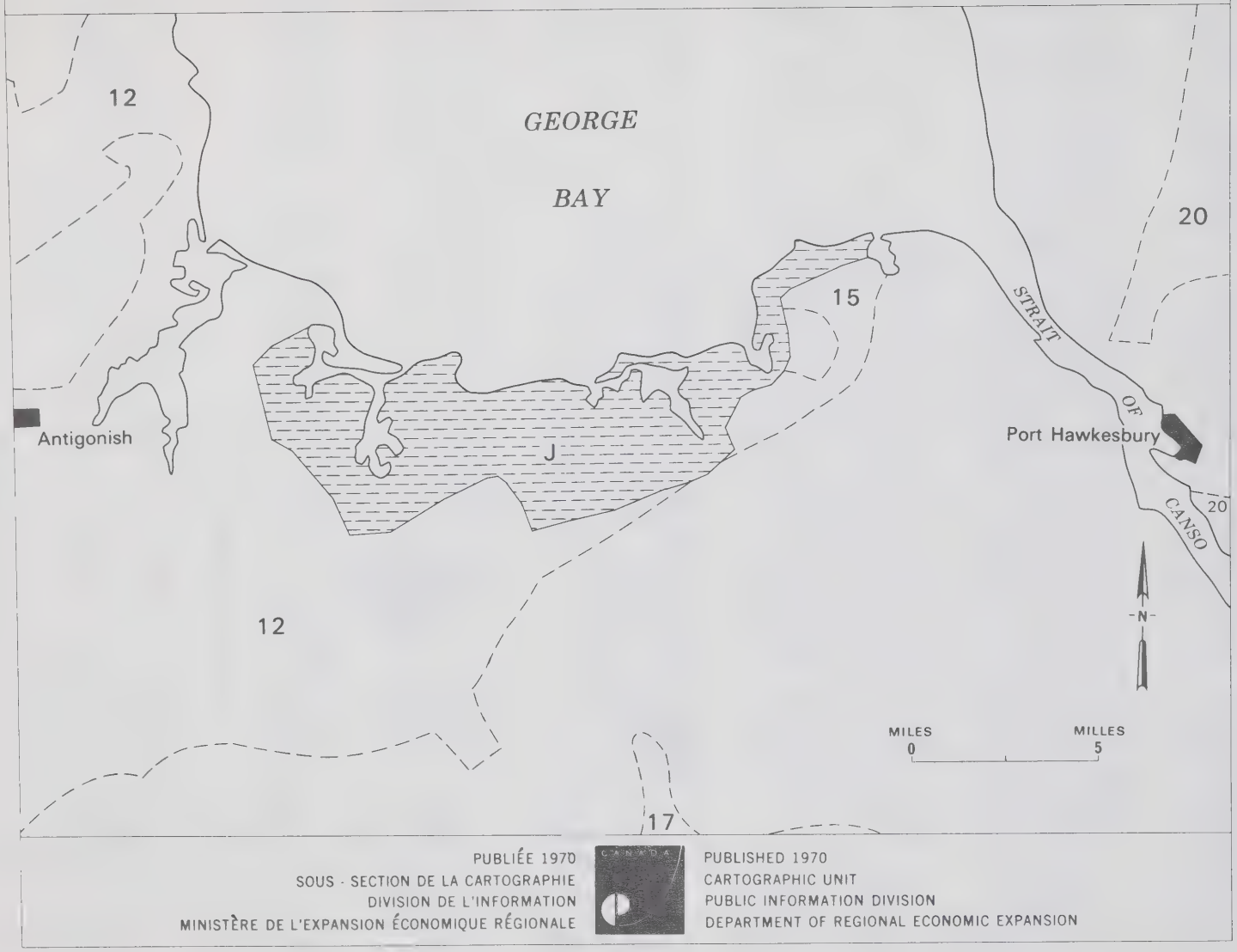
[1] Blocks H and M, 122,987 acres (Figure 8)

Figure: 9 — Multi-Crop and limited-use blocks-Antigonish Shore



The Soil and Crop Potential

Within the combined H and M multi-crop blocks are 21,000 acres of cleared Class 2, 15,000 acres of cleared Class 3, and over 2,000 acres of cleared Class 4 land. An additional 64,000 acres in Classes 2 and 3 remain under forest or bush.

Soils over much of the area are similar to those found in the most productive areas of the Annapolis-Cornwallis Valley, the main difference between the areas being one of climate. The average frost-free period over all of the area excepting Noel Shore is just over 100 days a year. This places a definite limitation on commercial production of frost-sensitive crops such as tobacco, cucurbits and tomatoes.

Lower than average corn heat units (Figure 2) places a further limitation on the types of crops which can be grown on a commercial scale. However, the soils and climate are suitable for production of most vegetables, potatoes, roots, small fruits, small grains and forage crops. Corn can be matured to good quality silage in most years. In the western section of the Noel Shore the average frost-free period approaches 120 days, making this district suitable for a wider range of crops than the area as a whole.

Of the 42,000 acres now cleared, nearly 29,000 are suited to the full range of crops adapted to the climate of the area, e.g. small fruits, most vegetables, small grains, root crops, forage and forestry. A further 9,000 acres are suited mainly to forage. The remaining cleared areas (4,000 acres) may be used for permanent pasture, blueberries, or be reforested (Tables 3 and 7).

This area differs from the Northumberland Shore in two ways. First, it has a small but stable local market for small fruits, vegetables and potatoes. Secondly, it has a stable local and metropolitan market for fluid milk. A large proportion of the cleared land is in forage crops supporting the dairy industry.

If we disregard the acreage devoted to small fruits, vegetables and potatoes then multi-crop blocks H and M will support about 250 Category A farms or 60 Category A farms plus 72 Category B farms (Page 29).

ANTIGONISH SHORE, POMQUET TO HAVRE BOUCHE

This block[1] occupies an area about 17 miles long and up to 5 miles wide bordering on George Bay. The adjacent open water has a modifying effect on the climate and most of the block has a low to intermediate frost hazard. The area has a frost-free period approaching 140 days and 1,900-2,100 corn heat units (Figure 2).

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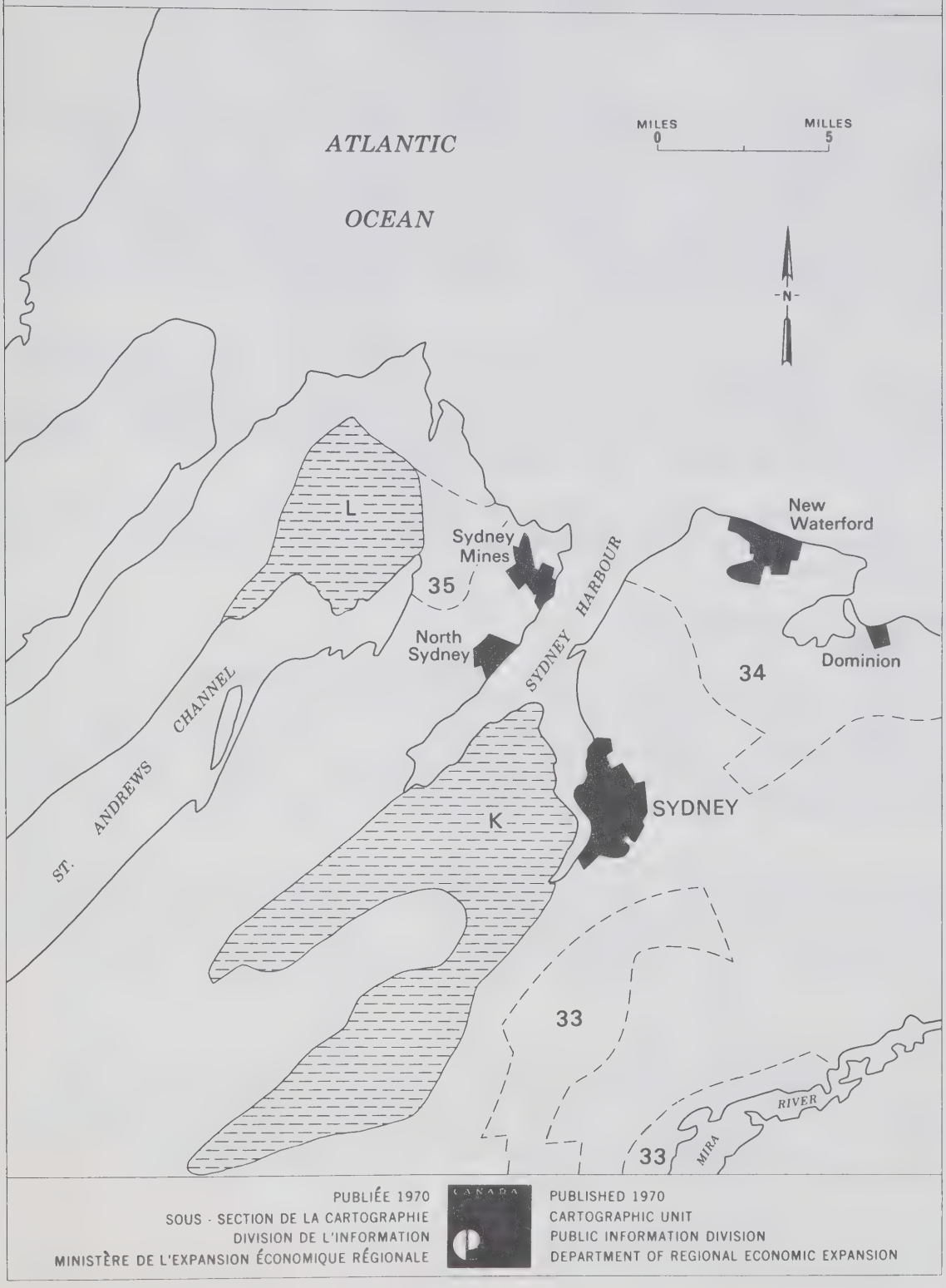
[1] Block J, 22,243 acres (Figure 9)

Figure: 10 — Multi-Crop and limited-use blocks-Sydney area



West and south of block J, soils of limited-use blocks 12 and 15 occupy a total area of 181,331 acres and supply much of the land base for the Antigonish County dairy-fluid milk industry, with markets in Antigonish and in Cape Breton industrial centres.

Historical

The first settlements occurred at Pomquet and Tracadie and were made by Acadian settlers near the middle of the 18th century. The traditional long narrow plans of the original farm holdings are still very much in evidence. While little is known of the details of early agriculture, crops were raised first on the easily tilled river flood plains and later farming spread to the surrounding uplands as land clearing and settlement progressed. This continued until 1880 when a gradual decline began, both in acreage cropped and in numbers of farms.

It is of some interest to note that the history of agriculture on the most versatile soils of the county has been less than impressive. This can be attributed in large measure to the extreme fragmentation of holdings that occurred under early Acadian settlement and tenure. Few farms of viable acreage exist in the area even today.

Whether through choice or circumstance, the economy of the area is at present dominated by fishing and lumbering, with agriculture playing a secondary role.

The Soil and Crop Potential

About 7,000 acres or 31 per cent of the land area is now cleared. Of this, 4,000 acres are in Class 2 and 2,600 acres are in Class 3 agricultural land. While this cleared land base is not large, there is sufficient area of suitable soils (4,344 acres) to support a viable small fruit, fresh vegetable or freezing crops industry. Further research may show that much of this acreage is suited to the production of tobacco.

In the short term it is expected that most of the area will remain in forage crops. With farm consolidation and field enlargement, viable grain and/or livestock farms can be developed in the area. The existing cleared land base will accommodate 44 Category A (livestock) farms or 17 livestock plus 11 Category B (grain/livestock) farms (Page 29).

BOULARDERIE - SYDNEY AREA

The soils in these areas,[1] while not of high agricultural potential, are suitable for multi-crop use. Farmers cropping them have a definite locational advantage over those on equivalent or somewhat better soils at greater distances from the Cape Breton industrial area.

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[1] Blocks K and L, 41,218 acres (Figure 10)

Figure: 11 — Multi-Crop and limited-use blocks-Annapolis Valley region

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The area comes under the modifying influence of the nearby Atlantic and the frost-free period averages 140 days. Higher frost hazards occur further inland and in pockets. Summers are cool but over 1,900 corn heat units are accumulated during the growing season.

Limited use blocks 33, 34 and 35, located near the multi-crop blocks, occupy an additional 51,331 acres of which 3,526 acres, or seven per cent, is in cleared Classes 2 and 3.

Historical

Agriculture in this area has been closely linked to the establishment and growth of the Cape Breton industrial complex centred in the coal and steel industries. The city of Sydney was established in 1784 at a time when Cape Breton Island was not a part of Nova Scotia.

Sydney and the surrounding towns have grown to a combined population of about 130,000; more than three-quarters the population of all Cape Breton Island. Local agriculture has developed to supply these commodities, particularly fluid milk and fresh vegetables, which have a strong comparative advantage through reduced transportation-to-market costs.

The Soil and Crop Potential

Land capability for agriculture maps record 37,561 acres of Class 2 and 3 land in multi-crop blocks K and L. Of this, 1,446 acres are cleared Class 2 and 5,426 acres are cleared Class 3 (Table 1). Further analysis indicates that about 7,000 acres of the land now cleared is suitable for forage crop production and of this, 3,300 acres could be used for grain, small fruits, vegetables and potatoes. A small, but lucrative, market exists in the Sydney area for these products. However, production from local sources is vulnerable to competition from better organized production elsewhere. Only large and relatively efficient units are likely to remain in operation over the long term.

The present cleared land in multi-crop blocks K and L will accommodate about 45 Category A livestock farms (Page 29). This number would be reduced by the acreage devoted to small fruits and truck crops.

ANNAPOLIS VALLEY REGION

This block[1] extends from the head of St. Mary Bay, Digby County in the west to Brooklyn, Hants County in the east and occupies the lowlands drained by the Annapolis, Cornwallis, Avon, St. Croix, Kennetcook and other rivers. Most of the block is in an area averaging 120-140 frost-free days a year. However, local variations occur that do not show in Figure 1. Frost hazard is moderate to high through the central part of the Annapolis,

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[1] Block N, 318,393 acres (Figure 11)

Cornwallis Valley and increases with distance from the modifying influence of Annapolis Basin on one end and Minas Basin on the other. Frost hazard decreases with elevation above the Valley floor.

Twenty-five hundred corn heat units are recorded in the western end of the Valley and most areas have 2,300 C.H.U. (Figure 2). North and south of block N are 87,730 acres of soils in limited-use blocks 38-44. Nearly 60 per cent of these are in Classes 2 and 3.

Historical

The first settlement in Nova Scotia was established by the French at Port Royal in 1605. During the next one hundred and fifty years and until their expulsion in 1755, French settlers developed small farms and communities in various parts of the Annapolis Valley. During this period, they dyked and drained many areas of tidal marsh on the Annapolis, Cornwallis and other rivers.

Following the expulsion, settlers from New England moved in to occupy the idle farmlands. Later, United Empire Loyalists in large numbers settled in the area. Many of these settlers, successful farmers and businessmen in New England, brought with them wealth and considerable experience which stimulated agricultural development in Nova Scotia.

The history of the Valley is closely associated with the development of the apple industry. Commercial production developed slowly because of transportation and markets. However, once these were established, the industry expanded rapidly with 30,000 acres in orchard by 1930. Expansion was most rapid between 1911 and 1934. Processing plants were built to handle fruit which could not be marketed fresh. Cold storage facilities and refrigerated transportation units resulted in better quality fruit getting to market.

A decline in overseas markets has since resulted in decreased total apple acreage with more emphasis on canning and freezing crops, fresh vegetables, potatoes, grain and more recently tobacco. Poultry, hogs, dairy and beef cattle have always been important in the agriculture of the area and some of the largest and most efficient units in Eastern Canada can be found here.

The Soil and Crop Potential

About 156,000 acres (50 per cent of the land) in block N is now cleared. Of this, 43,918 acres are cleared Class 2 and 82,188 acres are cleared Class 3.

The soils in Class 2 and some areas of Class 3 are suited to the production of small grains, canning and freezing crops, fresh vegetables, small fruits, potatoes, tree fruits, forage crops and forestry. Tobacco, a relative newcomer to the area, is fast becoming a strong competitor for

moderately coarse and coarse textured soils in those farming areas coming under the modifying climatic influence of Minas Basin.

The presence in the area of well-organized marketing, processing and storage facilities to handle high value-per-acre crops has produced a viability in farming found nowhere else in the Province. Their intensive use for tree fruits, vegetables and other high acre-value crops including corn and tobacco has created a strong demand and a premium price for the well-drained moderately coarse textured soils suited to intensive cropping. This has started a shift away from forage crops on soils suited to more intensive use. Finer textured upland soils, marshlands and areas with unfavourable topography are utilized for forage and livestock often as a complementary enterprise rather than as the principal source of income.

It is expected that the shift away from forage crops and into a more intensive cropping program will continue, and policies which will accelerate this trend should have a beneficial long term effect on the agricultural economy of the area.

The three counties of Hants, Kings and Annapolis now have about 22,000 acres in tree fruits, small fruits, vegetables, potatoes and tobacco. Nearly all of this acreage is located in block N; if it is reserved for these crops, there remains a residual of 51,000 acres suitable for grain, plus an additional 53,000 acres suited mainly for forage production (Table 7).

In theory, the cleared soils of block N can support tree fruit, small fruit, vegetable and like production at its present level and in addition provide the land base for 693 Category A (livestock) farms, or 350 Category A plus 127 Category B (grain/livestock) farms (Page 29).

LUNENBURG AREA

This block[1] occupies an area 30 miles long and up to 10 miles wide in the drumlin fields of Lunenburg County. These drumlins, oval hills of glacial till, occur over much of the southern upland, but in Lunenburg County are very numerous and often occur in clusters. They form the land base for practically all of the agriculture of the south shore.

Associated with block P are limited-use blocks 46-49 occupying a total of 95,210 acres, 8,462 acres of which are cleared and arable.

The more southerly latitude, together with the moderating influence of the Atlantic, gives the coastal area a relatively long frost-free season. However, this effect is sharply reduced inland and the average frost-free period drops from over 140 days at Lunenburg to less than 100 days at New Germany. The increase in frost hazard is offset by an increase in corn heat units from 1,700 on the coast to 2,100 at New Germany.

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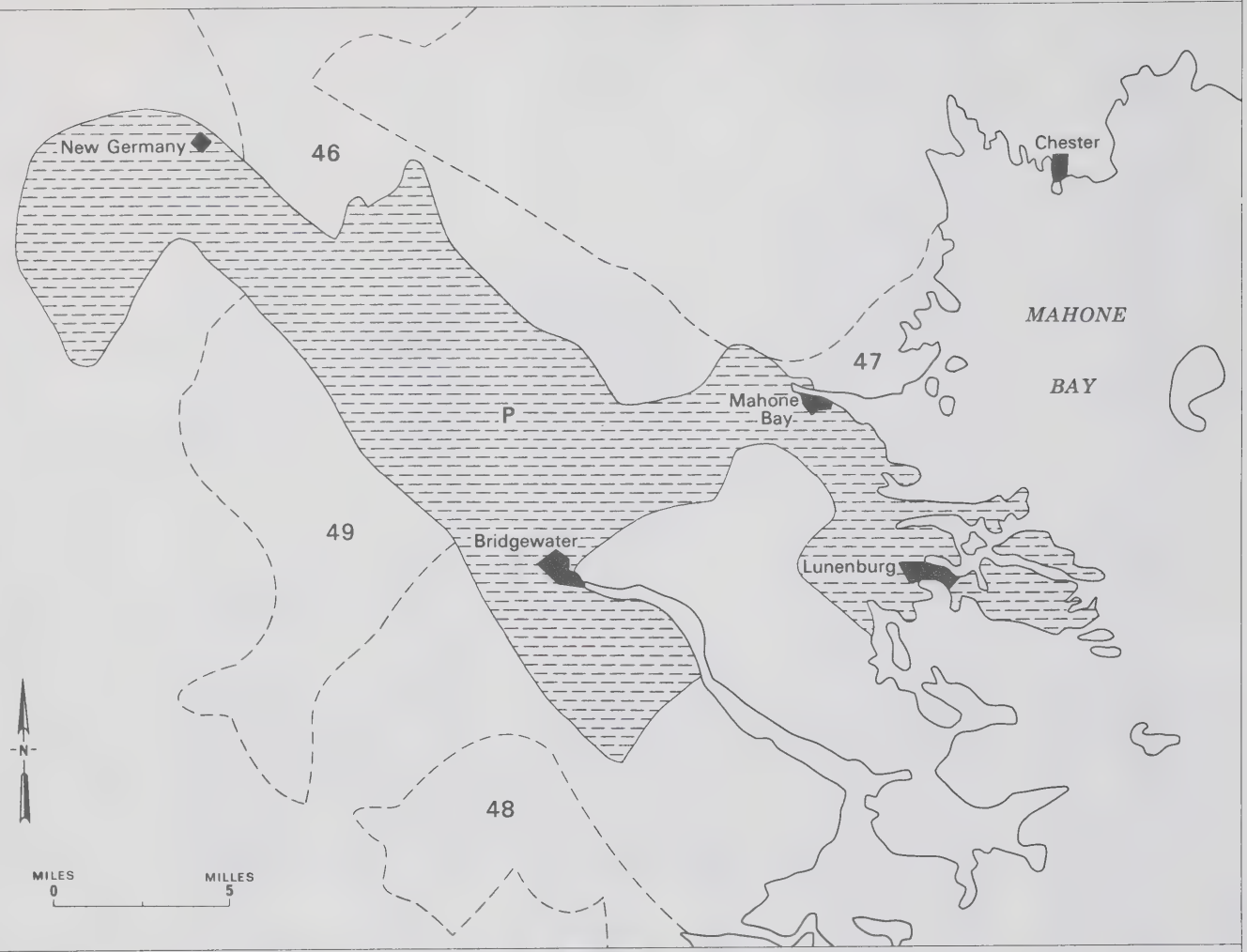
[1] Block P, 101,463 acres (Figure 12)

Figure: 12 — Multi-Crop and limited-use blocks-Lunenburg area



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Historical

French settlers produced agricultural crops at LaHavre as early as 1632, but organized farming began with the German-Swiss settlement of Lunenburg in 1753. These early settlers found the soils on the drumlins more suitable for clearing and farming than the more level, but shallow and stony soils between drumlins.

In the self sufficient farming economy of the time, the accent was on producing staple foods for home consumption. The population engaged in non farm activities (particularly fishing) provided a small but growing market for dairy products, meats, small fruits and vegetables. Better means of transportation and the opening of outside markets brought a major change from production of crops for direct consumption to crops for livestock feed. Livestock farming became the major agricultural industry, and remains so today.

The Soil and Crop Potential

Over 12,000 acres of land in block P is now cleared. Of this, 10,014 acres is in agricultural land Classes 2 and 3. This represents a significant departure from the criteria for multi-crop blocks in that only 10 per cent of the land area is cleared arable land. In Lunenburg County a peculiar combination of soils and topography limits farming to the drumlins, where the soils are deeper and less stony.[1]

Block P contains a substantial acreage of soils suited to small fruit, vegetable, tree fruit, potato and swede production. However, the limitations of field size and general topography militate against large scale grain production.

The cleared land base will support 67 Category A farms (Page 29). In areas where the ratio of forested to cleared land is large the consolidation of small farms into forest management blocks should be considered. Land now cleared in these areas has value for low bush blueberries and christmas tree plantations, as well as wildlife, forestry and multi-use recreation potential.

YARMOUTH AREA

This block[2] occupies an area about 20 miles long and up to 6 miles wide with the town of Yarmouth its focal point and major marketing centre. Land-use capability maps record only Class 3 or poorer land, and initial development costs are known to be higher than in competing areas. Yet the area has locational and climatic advantages which may override the disadvantages of poorer soils. An average frost-free period in excess of 140 days together with higher than average rainfall (46 inches) and 1,900 - 2,100 corn heat units are reported for the area. There is a small local market

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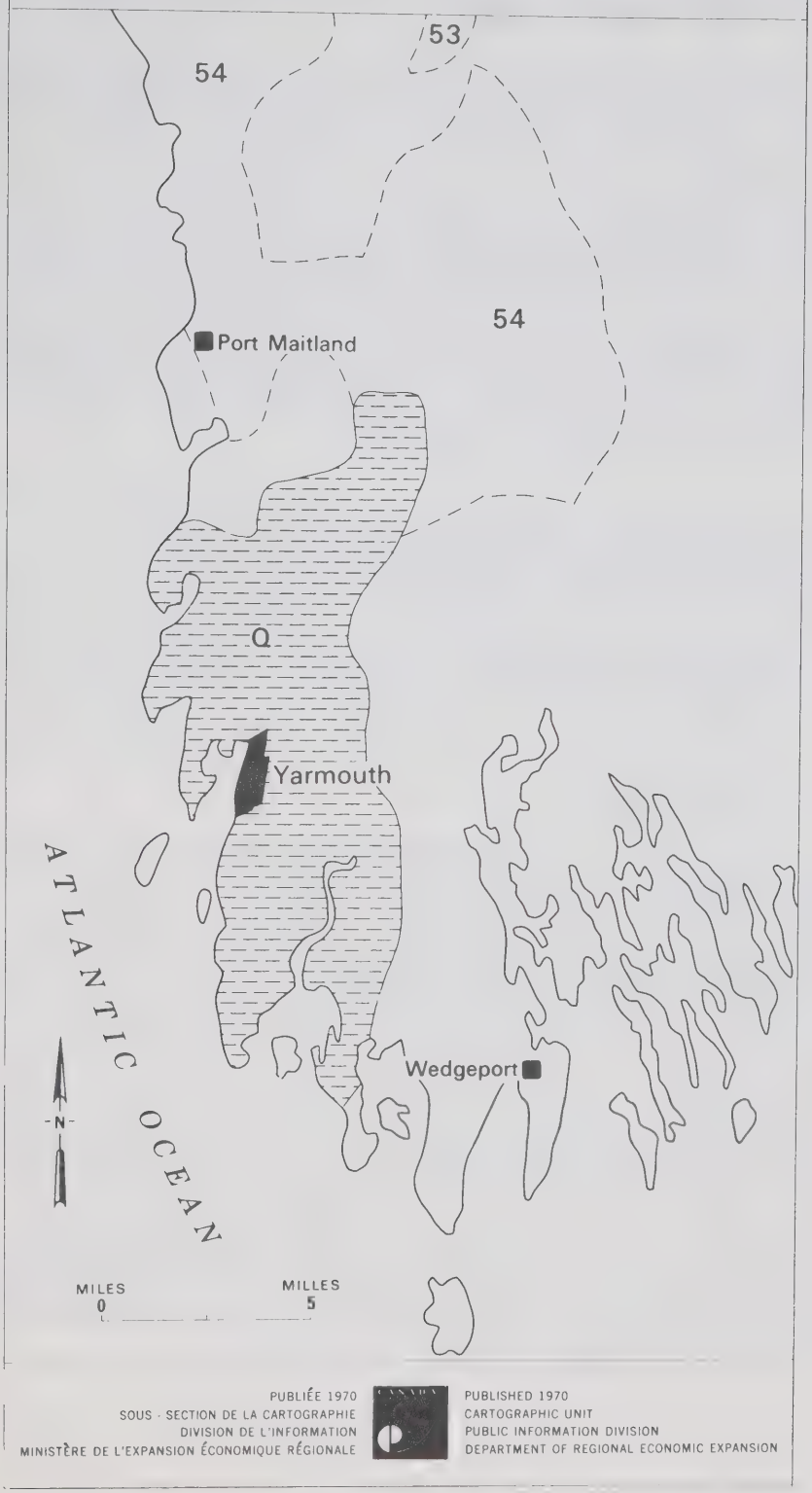
[1] Soil Survey of Lunenburg County, Nova Scotia, Report No. 7, Nova Scotia Soil Survey 1958, D.B. Cann and J.D. Hilchey

[2] Block Q, 33,633 acres (Figure 13)

Figure: 13—
Multi-crop and limited-use blocks—Yarmouth area



for fluid milk, fresh fruit and vegetables plus a very large potential market for some or all of these commodities on the northeastern seaboard of the U.S.A. Transportation of produce to this market is available through the ferry service to Bar Harbour, Maine.

Adjacent limited-use blocks 53 and 54 occupy an additional 84,793 acres of which 11,542 acres are recorded as cleared Class 3 (Table 6).

Historical

The first white settlers in the Yarmouth area were of French origin. They settled at Cheboque, Chegoggin, Pubnico and other coastal centres in the late 17th and early 18th centuries but were expelled with other Acadians in 1755. Settlement by New Englanders did not take place until 1761 and history records that these settlers had a difficult time surviving their first winter in the Yarmouth area. Evidently, many Acadians returned to their homes when tensions eased, because a large segment of the present population is of French extraction.

Present small farms with their neat stone fences attest to the vigour and persistence of the early settlers. As in other parts of the Province, the self-sufficient homesteader evolved into the food supplier, with a ready market to urban and rural non farm populations of the south-western shore. In this respect, farmers in the area had a decided advantage in that their nearest competitors for this market were farmers of the Annapolis Valley. Improved transportation links have reduced, but not eliminated, this advantage.

The Soil and Crop Potential

According to land capability maps, there are 22,410 acres of Class 3 soils in block Q, of which nearly 12,000 acres, or 53 per cent are cleared (Table 5). Much of this land is being used for production of forage crops for dairy and beef herds. However, the size of present farms and fields together with the high cost of land clearing in the area militate against expansion of the dairy industry beyond that required to supply the fluid milk requirements of the Yarmouth and Shelburne population.

There are a number of alternatives to dairy farming that could be developed further in Yarmouth County. Much of the cleared land is suitable for vegetable, potato and small fruit, particularly strawberry production. Some of the large peat bogs could be developed for cranberry, vegetable or potato crops. Several thousands of acres of cleared land could be further developed for lowbush blueberries. However, without adequate development of marketing, storage, processing facilities and quality control, production in the area has little chance of taking advantage of the potentially lucrative local and export markets.

In theory, there is sufficient cleared land available in block Q to support 80 Category A (livestock) farms. A substantial increase in small fruit or vegetable production would reduce proportionately the acreage available for forage.

LIMITED-USE BLOCKS

Fifty four limited-use agricultural blocks[1] were outlined for the Province (Figure 5), and 1,105,469 acres occupy 36 separate blocks of the nine northern counties; 805,507 acres occupy the 18 blocks of the nine southern counties. Block 9, covering parts of Halifax, Hants and Colchester, is the only one which straddles the boundary line separating the nine northern and nine southern counties (Figure 5).

Cleared and total acreages of the soils of various agricultural capability classes within the limited use blocks are given in Tables 2 and 6. These acreages are further summarized in Table 9.

The Soil and Crop Potential

A significant area of cleared Class 2 land (23,945 acres) is located within the limited use blocks (Table 9). A further 80,802 acres of cleared land in these blocks is, from the soils standpoint, deemed suitable for grain production (Table 10). This should serve to indicate that some capability for multi-crop use exists, and further that ample acreage of suitable land is available in limited-use blocks for a number of small fruit and fresh vegetable producers. Also, a cleared land base, though desirable from the standpoint of animal waste utilization and disposal, is not a prerequisite for successful hog or poultry operations.

Where limited use blocks are associated with multi-crop blocks, any multi-crop capability they have may be exploited. However, such areas do not have a land base adequate to support on their own the facilities required for successful small fruit and vegetable processing, canning, or freezing industries, nor can they support the infrastructure necessary for commercial grain production, storage and marketing.

Most of the soils within the limited use blocks are best suited to forage crops. Since cash markets for forage are limited, successful agricultural enterprises in these areas are usually based on the conversion of forage to animal products through ruminant livestock.

It should be emphasized that yields and costs of forage crops are not significantly different between multi-crop and limited use upland soils. However, farmers on the former have an advantage when growing small grains or silage corn as part of their livestock feeding program.

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[1] 1,910,976 acres, or 2,986 square miles

The most profitable product of forage conversion at this time would appear to be milk for the fluid milk market and most of the viable farms presently located in limited use areas have this as their primary product. Yet the provincial market for fluid milk is likely to remain static, fall, or rise very slowly with population growth. In the short term, it is unlikely that additional land will be required for fluid milk production. Total numbers of fluid milk producers should continue to decrease with a corresponding increase in the size and efficiency of individual units.

A strong demand now exists, both in this Province and in export markets, for quality dairy replacement stock. There is also a continuing deficit in local production of hogs, beef and lamb. While the profitability of all-beef, or sheep operations has not been clearly demonstrated, production of these animals as enterprises secondary or complementary to hog and poultry farms would seem to offer a preferred alternative to the production of heavily subsidized milk and butterfat.

The 266,000 acres of cleared land in Class 2, 3 and 4 of the limited use blocks provide the land base for 1,780 Category A livestock farms (Page 29). This number would be reduced by the acreage of cleared land utilized for vegetables, tree fruits, small fruits including lowbush blueberries and Christmas tree plantations.

Cleared Non-arable and Forested Land in Limited-use Blocks

The ratio of cleared non-arable and forested land to cleared arable land in multi-crop blocks is about 2:1. Thus, for the 300,000 acres of cleared arable land in these blocks, there is an associated 600,000 acres of wooded or other land not being used for cultivated crops. The intricate pattern of association between wooded and cleared land would seem to make undesirable or impractical any attempt to divorce the two.

A comparable situation exists in limited use blocks. However, in these areas the ratio of cleared non arable or forested to cleared arable land is nearly 8:1. If the same ratio maintained in multi-crop blocks is applied to limited use blocks, then about 500,000 acres of forested and other land would be retained as an integral part of consolidated farm units. This leaves a residual of 1,180,000 acres, mostly forested, which could be consolidated into forest management blocks of viable size, for sale or lease to existing or potential woodlot operators.

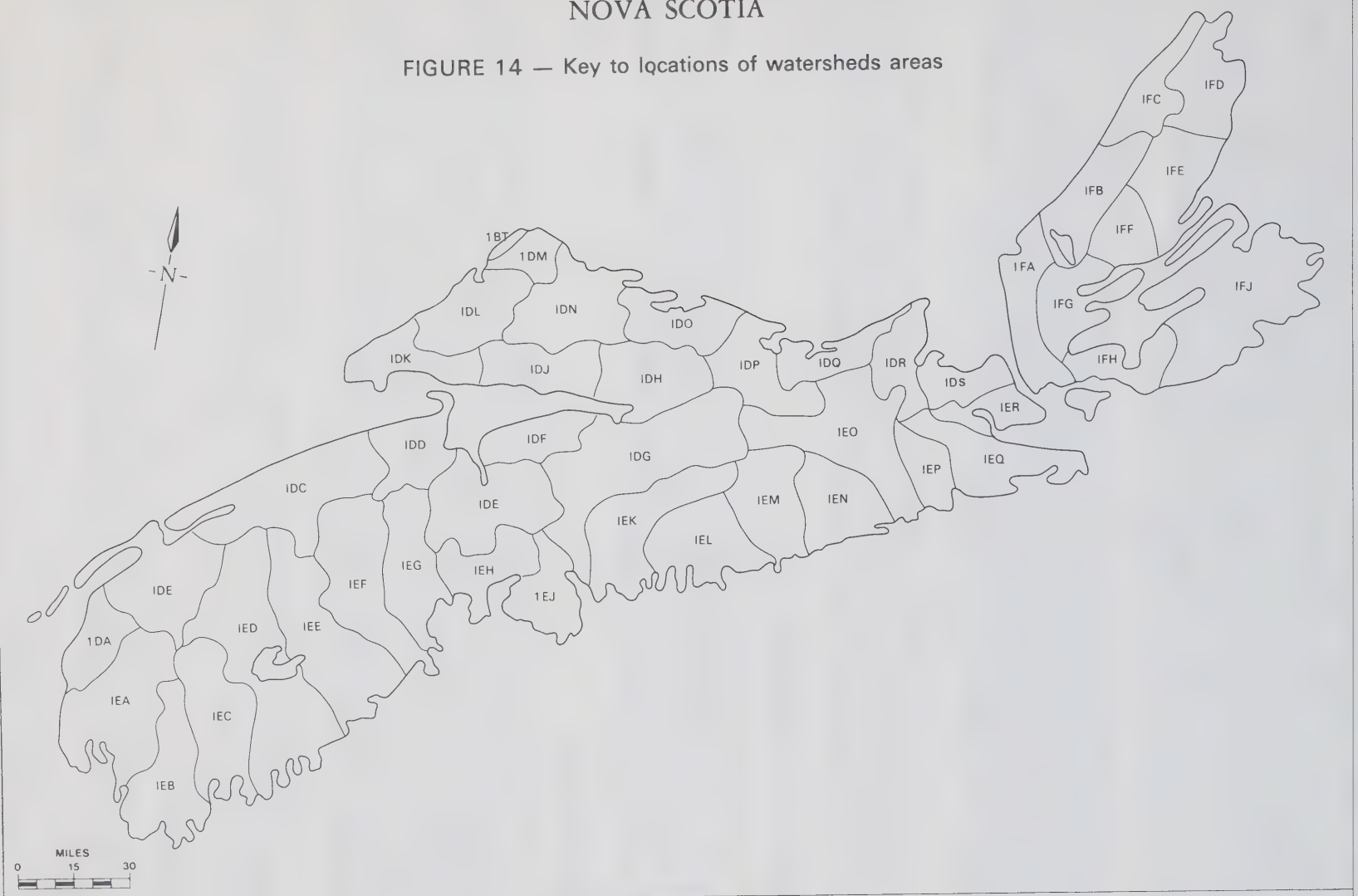
NON-AGRICULTURAL LAND

Within this land category[1] are over 300,000 acres of cleared land, of which 170,000 acres are in capability Classes 2, 3 and 4 (Table 11). For the most part, farms are small, relatively isolated, or contain a high

[1] 10,216,000 acres, or 15,963 square miles

NOVA SCOTIA

FIGURE 14 — Key to locations of watersheds areas



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proportion of low quality land. Often such farms are located on narrow river valleys where each farmer has access to a few acres of intervale or bottom land. Large areas of cleared land occur on uplands of Pictou, Antigonish and Cumberland Counties. Here stoniness, shallowness, climate and isolation adversely affect agricultural viability. Yet some crops, such as lowbush blueberries and Christmas trees, which do not require residence in the immediate area, often return higher net returns per acre than the conventional forage-livestock farming they have replaced.

In addition to providing for the exclusion of much of the Class 4 or poorer land, the guidelines used in agricultural blocking were such as to exclude isolated or scattered units of farmland regardless of quality. The assumption was that isolation and the associated socio-economic problems of communications, transportation and servicing individually or collectively work against the maintenance of a viable farming community.

Much of the cleared farmland in the non agricultural zone is abandoned, has reverted to forest or is being utilized for lowbush blueberries. A few viable farm operations persist, usually carried on by above average farmers with types of enterprises which do not require large acreages of good land.

Agricultural Use Alternatives

Some agricultural use alternatives are suggested for the cleared lands in the non agricultural zones. These acreages are tabulated by watersheds (Figure 14) for the Southwestern mainland (Table 12); Northeastern mainland (Table 13); and Cape Breton Island (Table 14). A summary tabulation for the Province is given in Table 15.

Lowbush Blueberries

From the soils standpoint over 80,000 acres of cleared land in the non agricultural zone can be used for lowbush blueberries. A blueberry survey of western Nova Scotia[1] indicates that the soils of the North Mountain are not suitable for this crop and this area was excluded. Cape Breton Island, where blueberries grow in profusion, poses a problem. While 10,000 cleared acres are deemed suitable from the soils standpoint, some climatic or other limitation, possibly overbrowsing by ungulates, has in most years depressed yields below profitable commercial levels.

Winterkill, frost hazard, exposure, size of field and accessibility will doubtless further limit the total acreage suitable for commercial production of this crop.

Part-time Farms

In general, the development of farms requiring a large acreage of good land should be discouraged in the non-agricultural areas. However, a

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[1] Survey of Potential Lowbush Blueberry Lands in Western Nova Scotia, by Charles McKittrik Collins

sizeable number of self sufficient part time farmers, who derive most of their income from fishing, lumbering, service industries or other off farm employment, have been able to improve their living standards through utilization of the small farm as a residence and a source of income-in-kind. There is no apparent reason to discourage such activity, particularly in those areas of the Province where it does not tie up potentially productive land which could be consolidated into viable full-time farms.

Community Pastures

There are a few areas in the Province where extensive blocks of cleared marginal land could be converted to permanent pasture through consolidation and renovation. Four of these have been developed as community pastures in eastern Nova Scotia and others may be suitable for this purpose.

TABLE 1 - CLEARED AND TOTAL ACREAGES OF SOILS IN MULTI-CROP BLOCKS[1]
NINE NORTHERN COUNTIES OF NOVA SCOTIA

	Class 2			Class 3			Class 4			Miscellaneous		
Block	Cleared	Total	Cleared as % of Total 2	Cleared	Total	Cleared as % of Total 3	Cleared	Total	Cleared as % of Total 4	Cleared	Total	Cleared as % of Total Miscellaneous
A	11,483	24,710	46	10,978	24,708	44	3,068	7,136	43	569	6,252	9
B	1,176	3,207	37	823	1,656	50	10	100	10	-	-	-
C	9,119	25,089	36	552	3,129	18	216	1,317	16	30	582	6
D	4,044	13,601	30	2,491	9,402	26	60	508	18	12	213	5
E	9,998	16,725	60	4,248	12,056	35	94	886	11	89	1,604	5
F	11,099	28,674	39	14,691	48,979	30	144	841	17	764	3,376	23
G	6,864	17,948	38	8,462	31,957	26	1,078	2,928	37	246	3,750	7
H	16,446	49,822	33	12,475	31,266	40	2,418	10,351	23	2,556	10,253	25
J	4,104	9,426	44	2,618	11,438	23	118	496	24	140	883	16
K	1,430	6,491	22	3,287	21,412	15	47	143	33	148	2,109	7
L	16	28	57	2,139	9,629	22	192	594	32	106	812	13
TOTAL	75,779	195,721	39	62,764	205,632	31	7,445	25,300	29	4,660	29,834	15

[1] Areas of soils suitable for production of a wide range of crops.

TABLE 2 - CLEARED AND TOTAL ACREAGES OF SOILS IN LIMITED-USE AGRICULTURAL BLOCKS[1]
NINE NORTHERN COUNTIES OF NOVA SCOTIA

	Class 2			Class 3			Class 4			Miscellaneous		
Block	Cleared	Total	Cleared as % of Total 2	Cleared	Total	Cleared as % of Total 3	Cleared	Total	Cleared as % of Total 4	Cleared	Total	Cleared as % of Total Miscellaneous
1	-	-	-	2,124	16,079	13	250	2,776	9	68	535	13
2	2,642	27,721	10	19,114	176,977	11	1,639	19,224	8	487	12,114	4
3	16	1,732	1	398	3,377	11	6	188	3	-	518	0
4	-	-	-	36	1,296	3	-	474	0	-	90	0
5	-	-	-	1,631	2,480	65	612	1,536	39	130	630	20
6	-	-	-	162	1,886	9	12	2,008	0.5	24	192	12
7	-	-	-	1,698	4,928	34	952	3,796	25	56	936	5
8	-	-	-	528	4,360	12	112	2,022	5	48	332	14
9	4,568	5,822	78	11,374	97,549	12	1,298	5,022	26	622	7,367	7
10	1,536	3,846	40	9,720	42,650	23	2,539	7,585	33	1,090	4,412	24
11	-	-	-	342	2,518	13	-	-	-	-	48	0
12	5,480	10,866	50	27,729	143,680	19	2,868	12,104	23	652	9,817	6
13	526	810	65	44	158	28	288	876	33	108	652	16
14	150	308	49	2,304	14,597	16	176	806	22	114	2,086	5
15	-	-	-	756	2,886	26	316	872	36	12	1,106	1
16	309	465	66	174	646	26	48	132	36	48	174	27
17	-	36	0	2,109	7,469	28	-	588	0	126	936	13
18	-	102	0	1,072	4,153	25	-	-	-	-	360	0
19	350	948	36	13,050	78,424	16	1,696	11,851	14	458	3,302	13
20	1,326	5,698	23	10,774	102,532	10	400	12,818	3	876	10,473	8
21	806	1,360	59	6,120	16,512	37	880	2,408	36	646	2,239	28
22	6	48	12	2,466	10,694	23	102	744	13	90	918	10
23	-	-	-	612	1,812	33	150	1,020	14	52	432	12
24	-	-	-	468	3,426	13	96	552	17	18	636	3
25	108	621	17	1,902	7,382	25	138	654	21	168	1,014	16
26	-	-	-	78	964	8	-	-	-	132	366	36
27	-	-	-	2,208	13,610	16	216	3,010	7	276	1,974	13
28	20	112	18	830	5,683	14	18	24	75	48	406	12
29	-	-	-	1,812	6,008	30	108	438	24	180	1,266	14
30	174	3,174	5	2,542	21,699	11	6	372	2	170	5,774	3
31	-	-	-	1,558	15,546	10	12	468	3	162	2,808	6
32	300	828	36	1,452	7,177	20	-	-	-	6	1,242	0.5
33	60	756	8	1,028	18,987	5	824	5,988	13	228	2,838	8
34	-	-	-	1,842	15,072	12	68	198	34	528	2,982	17
35	-	-	-	596	3,118	19	110	665	16	-	728	0
36	-	-	-	276	660	42	72	168	42	18	132	13
TOTAL	18,377	65,253	27	130,929	856,995	15	16,012	101,386	15	7,641	81,835	9

[1] Areas of soils suitable primarily for the production of forage crops.

TABLE 3 - SUGGESTED USE OF CLEARED ACREAGE IN MULTI-CROP BLOCKS[1]
NINE NORTHERN COUNTIES OF NOVA SOCITA - WITH GRAIN AND FORAGE THE MAJOR CROPS

Block	Grain[2]	Grain and/or Forage[3]	Permanent Pasture	Reforest or Blueberries	Reforest	Forested	Water	Total Area
A	11,706	24,771	165	752	386	36,528	204	62,806
B	1,382	1,999	10	-	-	2,954	-	4,963
C	9,119	9,887	20	-	10	20,200	-	30,117
D	4,641	6,535	10	62	-	17,093	24	23,724
E	10,888	14,246	183	-	-	16,834	8	31,271
F	12,151	25,772	766	-	22	55,310	-	81,870
G	9,888	15,332	264	940	108	39,939	-	56,583
H	23,855	30,079	2,724	234	762	67,767	126	101,692
J	4,344	6,728	136	-	38	15,326	15	22,243
K	1,490	4,764	48	-	94	24,502	747	30,155
L	1,821	2,227	130	-	96	8,610	-	11,063
TOTAL	91,285	142,340	4,456	1,988	1,516	305,063	1,124	456,487

[1] Areas of soils suitable for production of a wide range of crops.

[2] Most soils recorded as suitable for grain can also be used for small fruits, vegetables, potatoes and root crops.

[3] Includes acreage in column under "Grain".

TABLE 4 - SUGGESTED USE OF CLEARED ACREAGE IN LIMITED CROP BLOCKS[1]
NINE NORTHERN COUNTIES - WITH FORAGE THE MAJOR CROP

Block	Grain[2]	Grain and/or Forage[3]	Permanent Pasture	Reforest or Blueberries	Reforest	Forested	Water	Total Area
1	774	2,148	22	204	68	16,948	-	19,390
2	7,941	21,900	486	1,202	294	211,972	182	236,036
3	96	414	6	-	-	5,395	-	5,815
4	36	36	-	-	-	1,824	-	1,860
5	859	1,631	396	216	130	2,261	12	4,464
6	-	174	24	-	-	3,888	-	4,086
7	166	1,728	294	628	56	6,954	-	9,660
8	-	528	112	-	48	6,026	-	6,714
9	6,094	15,942	978	776	166	97,562	336	115,760
10	2,180	11,256	375	2,206	1,048	43,380	228	58,493
11	342	342	-	-	-	2,224	-	2,566
12	10,368	33,323	650	2,256	500	139,209	529	176,467
13	526	570	60	264	108	1,494	-	2,496
14	1,564	2,454	-	176	78	14,015	1,074	17,797
15	62	756	12	316	-	3,708	72	4,864
16	387	483	66	-	30	838	-	1,417
17	1,683	2,109	114	-	12	6,446	348	9,029
18	702	1,072	-	-	-	3,519	24	4,615
19	462	13,400	1,580	258	316	78,971	-	94,525
20	1,380	12,100	866	-	410	117,941	204	131,521
21	1,118	6,926	816	446	264	13,989	78	22,519
22	84	2,472	78	60	54	9,728	12	12,404
23	-	612	58	132	12	2,438	12	3,264
24	-	468	-	96	18	4,020	12	4,614
25	108	2,010	96	42	168	7,355	-	9,671
26	-	78	-	-	132	1,000	120	1,330
27	-	2,208	174	120	193	15,864	30	18,594
28	20	850	18	-	48	5,309	-	6,225
29	-	564	54	54	180	6,842	18	7,712
30	210	2,716	114	-	152	26,093	1,944	31,019
31	-	1,558	174	-	-	16,634	456	18,822
32	1,734	1,752	-	-	6	7,219	270	9,247
33	796	1,088	114	728	210	26,301	128	28,569
34	1,842	1,842	542	-	54	15,784	30	18,252
35	596	596	110	-	-	3,402	402	4,510
36	264	376	90	-	-	422	72	960
TOTAL	42,394	148,482	8,479	10,180	4,760	926,975	6,593	1,105,469

[1] Areas of soils chiefly suited to forage crops.

[2] Most soils recorded as suitable for grain can also be used for small fruits, vegetables, potatoes and root crops.

[3] Includes acreage in column under "Grain".

TABLE 5 - CLEARED AND TOTAL ACREAGES OF SOILS IN MULTI-CROP BLOCKS[1]
NINE SOUTHERN COUNTIES OF NOVA SCOTIA

	Class 2			Class 3			Class 3			Miscellaneous		
Block	Cleared	Total	Cleared as % of Total 2	Cleared	Total	Cleared as % of Total 3	Cleared	Total	Cleared as % of Total 4	Cleared	Total	Cleared as % of Total Miscellaneous
M	4,809	11,847	41	2,796	7,950	35	42	84	50	258	1,414	19
N	43,918	73,490	60	82,188	172,022	48	20,338	38,583	53	9,973	34,298	29
P	102	312	33	9,912	33,845	29	108	486	22	2,280	66,820	3
Q	-	-	-	11,851	22,410	53	18	36	50	2,256	11,217	20
TOTAL	48,829	85,649	57	106,747	236,227	45	20,506	39,189	52	14,767	113,749	12

[1] Areas of soils suitable for production of a wide range of crops.

TABLE 6 - CLEARED AND TOTAL ACREAGES OF SOILS IN LIMITED-USE BLOCKS[1]
NINE SOUTHERN COUNTIES OF NOVA SCOTIA

	Class 2			Class 3			Class 4			Miscellaneous		
Block	Cleared	Total	Cleared as % of Total 2	Cleared	Total	Cleared as % of Total 3	Cleared	Total	Cleared as % of Total 4	Cleared	Total	Cleared as % of Total Miscellaneous
9	5,114	15,136	34	47,092	388,911	12	2,042	21,956	9	3,012	26,293	11
37	-	-	-	546	7,544	7	42	60	70	90	2,718	3
38	-	-	-	528	3,303	16	-	96	0	6	210	3
39	-	-	-	5,358	18,757	28	594	2,664	22	480	3,624	13
40	-	-	-	918	3,488	26	42	246	17	162	936	17
41	-	-	-	2,940	11,740	25	822	3,174	26	210	1,637	13
42	-	-	-	423	1,160	36	-	-	-	700	8,523	8
43	328	736	44	2,134	5,230	41	490	742	66	774	5,527	14
44	-	-	-	3,368	7,260	46	742	1,844	40	316	6,832	5
45	-	-	-	608	1,412	43	14	34	41	148	5,996	2
46	18	44	41	3,146	10,262	31	188	812	23	1,214	24,114	5
47	-	-	-	534	1,574	34	-	-	-	422	3,142	13
48	-	-	-	1,380	7,036	19	-	-	-	1,086	14,932	7
49	-	-	-	3,072	10,686	29	36	162	22	492	22,446	2
50	-	-	-	2,146	6,646	32	12	60	20	436	16,116	3
51	-	-	-	872	2,128	41	-	-	-	390	10,254	4
52	108	534	20	2,232	25,025	9	114	2,041	5	176	4,911	4
53	-	-	-	162	6,507	3	-	84	0	48	2,172	2
54	-	-	-	11,380	52,206	21	1,086	3,903	28	1,859	19,921	9
TOTAL	5,568	16,450	34	88,839	570,875	15	6,224	37,878	16	12,021	180,304	6

[1] Areas of soils suitable primarily for the production of forage crops.

TABLE 7 - SUGGESTED USE OF CLEARED ACREAGE IN MULTI-CROP BLOCKS[1]
NINE SOUTHERN COUNTIES OF NOVA SCOTIA - GRAIN AND FORAGE THE MAJOR CROPS

Block	Grain[2]	Grain and/or Forage[3]	Permanent Pasture	Reforest or Blueberries	Reforest	Forested	Water	Total Area
M	4,923	7,605	300	-	-	13,342	48	21,295
N	72,799	126,106	17,046	154	11,998	162,849	240	318,393
P	278	10,018	402	108	1,878	84,676	4,381	101,463
Q	-	11,851	1,684	-	590	18,386	1,152	33,663
TOTAL	78,000	155,580	19,432	262	14,466	279,253	5,821	474,814

[1] Areas of soils suitable for a wide range of crops.

[2] Most soils recorded as suitable for grain can also be used for small fruits, vegetables, potatoes and root crops.

[3] Includes acreage in column under "Grain".

TABLE 8 - SUGGESTED USE OF CLEARED ACREAGES IN LIMITED-USE BLOCKS[1]
NINE SOUTHERN COUNTIES OF NOVA SCOTIA - FORAGE THE MAJOR CROP

Block	Grain[2]	Grain and/or Forage[3]	Permanent Pasture	Reforested or Blueberries	Reforest	Forested	Water	Total Area
9	13,394	52,206	3,390	950	714	392,888	2,148	452,296
37	-	546	42	42	48	9,374	270	10,322
38	-	528	6	-	-	3,075	-	3,609
39	5,904	5,904	666	-	408	17,923	144	25,045
40	918	918	48	-	156	3,548	-	4,670
41	2,862	2,940	846	-	186	12,579	-	16,551
42	-	423	110	-	590	8,116	444	9,683
43	2,290	2,462	26	486	752	8,509	-	12,235
44	54	3,368	314	166	578	11,510	-	15,936
45	38	608	4	-	162	6,110	558	7,442
46	64	3,164	78	142	1,182	29,962	704	35,232
47	146	534	16	-	406	3,514	246	4,716
48	48	1,692	496	-	590	17,554	1,636	21,968
49	-	3,072	-	36	492	28,308	1,386	33,294
50	-	2,146	18	12	418	19,438	790	22,822
51	248	872	26	-	364	10,598	522	12,382
52	2,340	2,340	156	98	36	27,194	2,687	32,511
53	162	162	12	-	36	8,349	204	8,763
54	9,940	11,380	2,720	126	90	56,388	5,326	76,030
TOTAL	38,408	95,265	8,974	2,058	7,208	674,937	17,065	805,507

[1] Areas of soils suitable primarily for the production of forage crops.

[2] Most soils recorded as suitable for grain can also be used for small fruits, vegetables, potatoes and root crops.

[3] Includes acreage in column under "Grain".

TABLE 9 - CLEARED AND TOTAL ACREAGE OF SOILS IN MULTI-CROP AND LIMITED-USE BLOCKS - NOVA SCOTIA

	Class 2			Class 3			Class 4			Miscellaneous			Total Area
	Cleared	Total	Cleared as % of Total 2	Cleared	Total	Cleared as % of Total 3	Cleared	Total	Cleared as % of Total 4	Cleared	Total	Cleared as % of Total Misc.	Total Area
Multi-Crop Blocks													
Nine Northern Counties	75,779	195,721	39	62,764	205,632	31	7,445	25,300	29	4,660	29,834	15	456,487
Nine Southern Counties	48,829	85,649	57	108,747	236,227	45	20,506	38,189	52	14,767	113,749	12	473,814
Sub-Total	124,608	281,370	44	169,511	441,859	38	27,951	63,489	44	19,427	143,583	13	930,301
Limited Use Blocks													
Nine Northern Counties	18,377	65,253	28	130,929	856,995	15	16,012	101,386	16	7,641	81,835	9	1,105,469
Nine Southern Counties	5,568	16,450	34	88,839	570,875	15	6,224	37,878	16	12,021	180,304	7	805,507
Sub-Total	23,945	81,703	29	219,768	1,427,870	15	22,236	139,264	16	19,662	262,139	7	1,910,976
TOTAL ALL BLOCKS	148,553	363,073	41	389,279	1,869,729	21	50,187	202,753	25	39,089	405,722	9	2,841,277

TABLE 10 - SUGGESTED USE OF CLEARED ACREAGES IN MULTI-CROP AND LIMITED-USE BLOCKS - NOVA SCOTIA WITH GRAIN AND FORAGE THE MAJOR CROPS

	Grain[1]	Grain and/or Forage[2]	Permanent Pasture	Reforest or Blueberries	Reforest	Forested	Water	Total Area
Multi-Crop Blocks								
Nine Northern Counties	91,285	142,340	4,456	1,988	1,516	305,063	1,124	456,487
Nine Southern Counties	78,000	155,580	19,432	262	14,466	279,253	5,821	473,814
Sub-Total	169,285	297,920	23,888	2,250	15,982	584,316	6,943	930,301
Limited Use Blocks								
Nine Northern Counties	42,394	148,482	8,479	10,180	4,760	926,975	6,593	1,105,469
Nine Southern Counties	38,408	95,265	8,974	2,058	7,208	674,937	17,065	805,507
Sub-Total	80,802	243,747	17,453	12,238	11,968	1,601,912	23,658	1,910,976
TOTAL AREA	250,087	541,667	41,341	14,488	27,950	2,186,228	30,601	2,841,277

[1] Most soils recorded as suitable for grain can also be used for small fruits, vegetables, potatoes and root crops.

[2] Includes acreage in column under "Grain".

TABLE 11 - AGRICULTURAL CAPABILITY OF CLEARED LAND OUTSIDE MULTI-CROP AND LIMITED-USE BLOCKS - NON-AGRICULTURAL LAND[1]

Zone	Agricultural Class 2	Class 3	Class 4	Miscellaneous	Total
Northeastern Mainland	1,633	17,383	61,457	35,709	116,182
Southwestern Mainland	324	23,769	34,320	51,102	109,515
Cape Breton Island	546	19,644	11,052	44,526	75,768
TOTAL	2,503	60,796	106,829	131,337	301,465

[1] The term "non-agricultural" is relative. The 170,000 acres of cleared Class 2, 3 and 4 shown here comprise only 1.7 per cent of a total area of 10,216,000 acres, most of which is in Class 7.

TABLE 12 - AGRICULTURAL USE ALTERNATIVES FOR CLEARED ACREAGES OUTSIDE MULTI-CROP AND LIMITED-USE BLOCKS - SOUTHWESTERN MAINLAND

Hydrometric Area	Lowbush Blueberries Reforest Forage Pasture	Reforest Forage Pasture	Reforest Pasture	Total
1DA	1,388	290	878	2,556
1DB	2,458	860	3,662	6,980
1DC	3,628	5,804	13,306	22,738
1DD	1,122	9,942	3,034	14,098
1DE	1,222	929	1,024	3,175
1DF	350	1,912	202	2,464
1DG	80	1,426	666	2,172
1EA	3,642	7,096	2,913	13,651
1EB	1,416	690	3,791	5,897
1EC	-	162	3,282	3,444
1ED	618	222	2,516	3,356
1EE	2,354	114	2,290	4,758
1EF	2,330	186	3,384	5,900
1EG	150	1,090	2,928	4,168
1EH	90	-	1,050	1,140
1EJ	600	1,230	1,224	3,054
1EK	414	2,198	1,596	4,208
1EL	470	342	1,794	2,606
1EM	72	-	504	576
1EN	126	624	1,824	2,574
TOTAL	22,534	35,117	51,868	109,515

TABLE 13 - AGRICULTURAL USE ALTERNATIVES FOR CLEARED ACREAGES OUTSIDE MULTI-CROP AND LIMITED-USE BLOCKS - NORTHEASTERN MAINLAND

Hydrometric Area	Lowbush Blueberries Reforest Forage Pasture	Reforest Forage Pasture	Reforest Pasture	Total
1DG	732	2,387	1,036	4,155
1DH	5,620	3,666	2,284	11,570
1DJ	2,270	1,890	2,004	6,164
1DK	3,132	5,892	4,790	13,814
1DL	4,204	1,846	2,080	8,130
1DM	-	1,171	618	1,789
1DN	2,171	2,457	2,466	7,094
1DO	8,448	2,494	3,740	14,682
1DP	9,558	2,422	4,150	16,130
1DQ	4,649	952	2,483	8,084
1DR	1,620	1,076	2,798	5,494
1DS	1,574	1,000	340	2,914
1EN	228	18	1,524	1,770
1EO	2,066	3,014	1,652	6,732
1EP	78	930	134	1,142
1EQ	1,438	868	1,066	3,372
1ER	314	1,360	1,472	3,146
TOTAL	48,102	33,443	34,637	116,182

TABLE 14 - AGRICULTURAL USE ALTERNATIVES FOR CLEARED ACREAGES OUTSIDE MULTI-CROP AND LIMITED-USE BLOCKS - CAPE BRETON ISLAND

Hydrometric Area	Lowbush Blueberries[1] Reforest Forage Pasture	Reforest Forage Pasture	Reforest Pasture	Total
1FA	930	4,446	7,990	13,366
1FB	777	7,128	5,066	12,971
1FC	-	-	1,044	1,044
1FD	606	336	978	1,920
1FE	252	228	2,628	3,108
1FF	576	288	2,622	3,486
1FG	906	1,180	3,706	5,792
1FH	192	1,744	4,914	6,850
1FJ	6,246	6,948	14,037	27,231
TOTAL	10,485	22,298	42,985	75,768

[1] Consistant satisfactory yields of lowbush blueberries have not been attained on Cape Breton Island to date.

TABLE 15 - AGRICULTURAL USE ALTERNATIVES FOR CLEARED ACREAGES OUTSIDE MULTI-CROP AND LIMITED-USE BLOCKS - NOVA SCOTIA

Alternatives[1] / Zone	Lowbush Blueberries[2] Reforest Forage Pasture	Reforest[3] Forage Pasture	Reforest[3] Pasture	Total
Northeastern Mainland	48,102	33,443	34,637	116,182
Southwestern Mainland	22,534	35,117	51,868	109,515
Cape Breton Island	10,485	22,298	42,985	75,768
TOTAL	81,121	90,858	129,490	301,465

[1] Additional alternatives could include disposal of manures from hogs and poultry; home and market gardens hobby farms, etc.

[2] Soil limitations only. Additional constraints on commercial production such as exposure, frost hazard, field size and location would reduce these acreages at least 50 per cent.

[3] Includes acreages of wetlands, exposed coastal areas and beaches which may have wildlife or recreational value but are unfeasible to reforest.